OPERATION CENIZA-ARENA:

THE RETENTION OF FALLOUT PARTICLES FROM VOLCAN IRAZU (COSTA RICA) BY PLANTS AND PEOPLE

PART TWO APPENDICES

STANFORD
RESEARCH
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Appendix A

SUMMARY OF HOURLY DEPOSIT RATES OF CENIZA-ARENA DEPOSITS AT THE TWO LAND PLOTS AND ERUPTIVE BEHAVIOR OF VOLCAN IRAZU

The estimated hourly deposition rates and weight accumulations of ceniza-arena particles, as derived from the modified recording dew balance charts, field notes, and gross ceniza-arena deposition measurements, are summarized in Table A-1 for Plot No. 1 and in Table A-2 for Plot No. 2. These data show that the highest hourly deposit rates occurred in June 1964 and that they gradually decreased on each succeeding sampling period until the volcano ceased erupting in February 1965.

Observations on the number of eruptions that occurred each day were recorded by the Costa Rican Guardía Civil at a station near the crater of Volcán Irazú, starting in April 1964. The available records of these reported observations were kindly provided by Don Elliott Coen, Head of the National Meteorological Service of Costa Rica. The visual counting of the eruptions also included designating whether the cloud produced by the eruption was white (a water vapor cloud containing sulfur oxides), tan (a medium-sized cloud with a relatively low concentration of dry particles), or black (a dense cloud from a highly energetic explosion with a relatively high concentration of dry or wetted particles). In general, the black clouds rose to the highest altitudes, and it was only when a black cloud was produced that significant amounts of ceniza-arena particles were deposited in the city of San José.

The counts of the daily eruptions are given in Table A-3, together with monthly summaries of the total number of each type of cloud formed, the average number of eruptions per day, the average fraction of each cloud type, and the fraction of the number of days of the month that the volcano was active.

The average monthly eruption rate of Volcán Irazú is plotted as a function of time in Figure A-1. The data show that, whereas the frequency of the weaker explosions generally increased from April to October, the frequency of the eruptions producing the black clouds generally decreased. The same information is obtained from the plot of the relative frequency of the three types of eruptions shown in Figure A-2.

Data on the periodic frequency of the eruptions that formed black clouds are summarized in Table A-4 and plotted in Figure A-3. These representations do not give the change in frequency by month; the data show that the average number of eruptions per day during the active periods generally decreased with time and that the length of the inactive period (and time between midpoints of active periods) was largest during October to January. The peak values in the average number of eruptions per active day occurred on alternate months.

In a progress report of geological studies of Volcán Irazú, Mr. K. J. Murata* concluded that the climax of the eruption was passed in December 1963 or January 1964. The evidence supporting this conclusion included: (1) the estimates of the amount of ceniza-arena removed from the downtown area of San José, which were highest in January 1964 (however, the rains between April and November 1963 would have removed the ceniza-arena particles by washing them from roofs and streets into the storm drains, so that the amounts of ceniza-arena removed from the city streets during this period would certainly be less than that deposited in the city); (2) a study of ash deposits at the volcano summit (no detailed data are given as evidence); and (3) photographs taken in December 1963, which suggest that the top of the magma column stood highest in the chimney of the volcano at that time.

Murata's conclusion regarding the time of peak volcanic activity, without specifically defining the term, appears to refer to a maximum in the ejection rate of material (so-called ash, pumice, and incandescent bombs--i.e., chunks of hot rock). The time-averaged deposition rate of the ceniza-arena collected in San Jose by Don Elliott Coen** and coworkers between March 1963 and March 1964 had a maximum value in December 1963 of 0.61 gm/sq ft per hr. (See Table 1 of Part One of this report.)

The highest time-averaged deposition rate in San José over a period of a month previous to the December peak was in July 1963; the average deposition rate for that month was 0.21 gm/sq ft per hr. If it is assummed that the minor fluctuations in the monthly average deposition from one month to the next was mainly due to fluctuations in the wind patterns, the progressive declire in the deposition rate at a given location may be interpreted as a progressive decrease in the concentration of the particles in the material ejected from the volcano. Such a general decrease in the

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* Murata, K. J., Report of Progress During the First Six Months of Investigation, Project for Scientific Studies of Irazú Volcano, U.S. Geological Survey, Menlo Park, California, October 1964

** Coen, Don Elliott, private communication, June 1964

deposition rates in San José did occur during the dry months, December 1963 to March 1964. The measured average deposition rates for these months at San José were as follows:

Month	Average Deposit Rate (gm/sq ft per hr)
December 1963	0.61
January 1964	0.48
February 1964	0.080
March 1964	0.086

If mid-December is assumed as the time of maximum volcanic activity with respect to ejection of material, the above data can be represented by the formula

$$\overline{\Delta m/\Delta t} = 0.86\, e^{-0.93t} \text{ gm/sq ft per hr} \qquad \text{(A1)}$$

where t is the time in months after December 15, 1963. The constant 0.93 is equivalent to a half-life of 0.74 month for the decay rate of volcanic activity. This value is in close agreement with the half-life, 0.87 month, obtained from the more accurate measurements made at the two land plots from June 1964 to February 1965 and presented in Figure 7 of the text. Thus the deposition rate data tend to confirm Murata's conclusion that the maximum volcanic activity in terms of debris production probably occurred during December 1963.

The above data on decrease in the deposition rates by a factor of 2 every 3 or 4 weeks was used in early November 1964 to predict a virtual cessation of noticeable particle depositions within the following 4 to 6 months. The volcano ceased erupting four months later.

Table A-1

SUMMARY, FROM DEW BALANCE RECORDS, OF ESTIMATED HOURLY DEPOSITION RATES AND WEIGHT ACCUMULATION OF CENIZA-ARENA PARTICLES AT PLOT NO. 1

Note: m, in gm/sq ft, is the total surface density of ceniza-arena deposited up to a given date and hour for each sampling period; $\Delta m/\Delta t$, in gm/sq ft per hour, is the amount of ceniza-arena deposited in the hour preceding the indicated hour.

Table A-1

Hour	Date 6/15 m	6/15 Δm/Δt	6/16 m	6/16 Δm/Δt	6/17 m	6/17 Δm/Δt	6/18 m	6/18 Δm/Δt	6/19 m	6/19 Δm/Δt	6/20 m	6/20 Δm/Δt
1			33.30	0	94.09	4.13	180.08	0.15	254.49	0	290.31	21.08
2			33.30	0	98.21	4.12	180.08	0	254.49	0	295.69	5.38
3			33.30	0	103.71	5.50	180.08	0	254.49	0	300.09	4.40
4			33.30	0	114.73	11.02	180.08	0	254.49	0	300.09	0
5			33.30	0	120.25	5.52	180.08	0	254.49	0	300.09	0
6			33.30	0	121.63	1.38	181.99	1.90	254.49	0	300.09	0
7			33.30	0	124.84	3.21	191.50	9.51	254.49	0	300.09	0
8			36.35	3.05	135.66	10.82	206.92	15.42	254.49	0	300.09	0
9	0	-	42.54	6.19	140.02	4.36	210.09	3.17	254.49	0	300.09	0
10	2.10	2.10	49.19	6.65	140.02	0	210.09	0	254.49	0	300.09	0
11	3.50	1.40	49.19	0	140.02	0	210.09	0	254.49	0		
12	10.22	6.72	49.19	0	143.36	3.34	210.09	0	254.49	0		
13	11.49	1.27	49.19	0	146.84	3.48	210.09	0	254.49	0		
14	16.25	4.76	49.19	0	149.45	2.61	210.09	0	254.49	0		
15	18.92	2.67	49.19	0	150.12	0.67	210.09	0	254.49	0		
16	19.90	0.98	49.19	0	151.35	1.23	211.29	1.20	254.49	0		
17	28.30	8.40	49.19	0	154.39	3.04	236.03	24.74	254.49	0		
18	33.30	5.00	49.19	0	156.28	1.89	224.36	5.33	254.49	0		
19	33.30	0	49.19	0	174.86	18.59	241.89	0.53	254.49	0		
20	33.30	0	49.19	0	178.06	3.20	242.96	1.07	254.49	0		
21	33.30	0	63.79	14.60	179.93	1.87	254.49	11.53	254.77	0.28		
22	33.30	0	80.01	16.22	179.93	0	254.49	0	255.18	0.41		
23	33.30	0	86.93	6.92	179.93	0	254.49	0	257.66	2.48		
24	33.30	0	89.96	3.03	179.93	0	254.49	0	269.23	11.57		

Table A-1 (continued)

Hour	Date 7/14 m	7/14 Δm/Δt	7/15 m	7/15 Δm/Δt	7/16 m	7/16 Δm/Δt	7/17 m	7/17 Δm/Δ	7/18 m	7/18 Δm/Δt	7/19 m	7/19 Δm/Δt
1			7.45	0.60	32.38	0.28	41.04	0	55.34	0.06	57.95	0
2			7.72	0.27	32.56	0.18	41.04	0	55.40	0.06	57.95	0
3			7.89	0.17	32.56	0	41.04	0	55.47	0.07	57.95	0
4			8.44	0.55	32.84	0.28	41.04	0	55.47	0	57.95	0
5			9.15	0.71	34.32	1.48	41.32	0.28	55.65	0.18	58.03	0.08
6			9.75	0.60	34.78	0.46	41.69	0.37	55.65	0	58.53	0.50
7			12.00	2.25	34.78	0	41.69	0	57.95	2.30	58.53	0
8			13.87	1.87	34.78	0	41.69	0	57.95	0	58.53	0
9	0	-	15.26	1.39	34.78	0	41.69	0	57.95	0	58.53	0
10	0.13	0.13	18.52	3.26	34.78	0	41.69	0	57.95	0	58.53	0
11	0.13	0	22.68	4.16	34.78	0	41.69	0	57.95	0	58.53	0
12	0.13	0	24.06	1.38	34.78	0	42.37	0.68	57.95	0	58.53	0
13	0.13	0	25.47	1.41	34.78	0	43.24	0.87	57.95	0	58.53	0
14	0.13	0	25.96	0.49	34.78	0	43.49	0.25	57.95	0	58.53	0
15	0.13	0	27.66	1.70	34.78	0	43.61	0.12	57.95	0	58.95	0.42
16	0.13	0	28.88	1.22	34.78	0	43.86	0.25	57.95	0	58.95	0
17	0.97	0.84	29.52	0.64	34.78	0	43.86	0	57.95	0	59.03	0.08
18	1.41	0.44	31.18	1.66	37.91	3.13	43.86	0	57.95	0	59.11	0.08
19	1.69	0.28	31.55	0.37	39.57	1.66	44.05	0.19	57.95	0	59.45	0.34
20	1.96	0.27	32.10	0.55	40.49	0.92	44.11	0.06	57.95	0	60.03	0.58
21	3.12	1.16	32.10	0	40.86	0.37	44.17	0.06	57.95	0	60.78	0.75
22	3.99	0.87	32.10	0	41.04	0.18	44.36	0.19	57.95	0	60.78	0
23	5.09	1.10	32.10	0	41.04	0	55.16	10.80	57.95	0	60.86	0.08
24	6.85	1.76	32.10	0	41.04	0	55.28	0.12	57.95	0	60.86	0

Table A-1 (continued)

Hour	Date 7/20 m	7/20 Δm/Δt	7/21 m	7/21 Δm/Δt	8/10 m	8/10 Δm/Δt	8/11 m	8/11 Δm/Δt	8/12 m	8/12 Δm/Δt	8/13 m	8/13 Δm/Δt
1	60.86	0	79.00	0.45			9.30	0.57	45.44	5.05	78.27	0.00
2	60.86	0	79.22	0.22			9.42	0.12	47.96	2.52	78.27	0.00
3	60.86	0	79.22	0			9.53	0.11	47.96	0.00	78.27	0.00
4	60.86	0	79.22	0			9.59	0.06	47.96	0.00	78.27	0.00
5	60.86	0	79.22	0			9.71	0.12	47.96	0.00	78.27	0.00
6	60.86	0	79.22	0			9.76	0.04	47.96	0.00	78.27	0.00
7	60.86	0	79.22	0			9.76	0.00	(58.)*	10	78.27	0.00
8	60.86	0	79.22	0			9.76	0.00	(62.)	4	78.27	0.00
9	60.86	0					9.76	0.00	(64.)	2	78.27	0.00
10	60.86	0					9.76	0.00	(66.)	2	78.27	0.00
11	60.86	0					9.86	0.10	(67.)	1	78.27	0.00
12	60.86	0					9.88	0.02	(71.)	4	78.27	0.00
13	60.86	0					9.95	0.03	(73.)	2	78.27	0.00
14	60.86	0					13.03	3.08	(76.)	3	79.10	0.83
15	74.52	13.66			0	-	15.11	2.08	(77.)	1	79.46	0.36
16	74.52	0			0.33	0.33	24.23	9.12	(78.)	1	79.70	0.24
17	74.52	0			0.97	0.64	34.39	10.16	78.3	0.3	79.94	0.24
18	75.19	0.67			2.29	1.32	36.23	1.84	78.3	0.0	80.12	0.18
19	76.53	1.34			3.44	1.15	38.23	2.00	78.3	0.0	80.24	0.12
20	76.53	0			4.42	0.98	39.43	1.20	78.27	0.0	80.54	0.30
21	76.53	0			5.11	0.69	39.91	0.48	78.27	0.00	80.78	0.24
22	76.98	0.45			5.45	0.34	40.23	0.32	78.27	0.00	80.78	0.00
23	77.84	0.86			5.97	0.52	40.39	0.16	78.27	0.00	80.78	0.00
24	78.55	0.71			8.73	2.76	40.39	0.00	78.27	0.00	80.78	0.00

* Estimated values.

Table A-1 (continued)

Hours	Date 8/14 m	8/14 Δm/Δt	8/15 m	8/15 Δm/Δt	9/2 m	9/2 Δm/Δt	9/3 m	9/3 Δm/Δt	9/4 m	9/4 Δm/Δt	9/5 m	9/5 Δm/Δt
1	80.84	0.06	81.48	0.03			6.47	1.29	32.36	0.41	46.61	0.24
2	80.90	0.06	81.50	0.02			9.46	2.99	32.57	0.21	46.61	0
3	80.94	0.04	81.51	0.01			13.44	3.98	33.19	0.62	46.70	0.09
4	80.98	0.04	81.51	0.00			17.12	3.68	34.44	1.25	46.86	0.16
5	81.00	0.02	81.51	0.00			18.12	1.00	35.37	0.93	47.03	0.17
6	81.00	0.00	81.51	0.00			19.01	0.89	36.10	0.73	47.03	0
7	81.00	0.00	81.51	0.00	0	-	19.93	0.92	37.24	1.14	47.28	0.25
8	81.00	0.00	81.70	0.19	0	-	21.56	1.63	38.38	1.14	47.36	0.08
9	81.00	0.00	81.84	0.14	0	-	25.08	3.52	42.54	4.16	47.36	0
10	81.00	0.00	81.96	0.12	0	-	25.60	0.52	42.54	0	47.70	0.34
11	81.00	0.00			0	-	25.60	0	42.54	0	47.70	0
12	81.00	0.00			0	-	25.60	0	42.54	0	51.27	3.57
13	81.00	0.00			0	-	25.60	0	42.87	0.33	51.35	0.08
14	81.00	0.00			0	-	26.76	1.16	43.04	0.17	51.44	0.09
15	81.00	0.00			0	-	26.86	0.10	43.29	0.25	51.44	0
16	81.00	0.00			0	-	28.62	1.76	43.29	0	51.60	0.16
17	81.00	0.00			0	-	29.14	0.52	44.12	0.83	51.85	0.25
18	81.00	0.00			0	-	29.46	0.32	45.03	0.91	54.27	2.42
19	81.14	0.14			0.30	0.30	29.46	0	45.37	0.34	56.51	2.24
20	86.36	0.22			0.70	0.40	29.56	0.10	45.70	0.33	57.09	0.58
21	81.44	0.08			1.49	0.79	29.97	0.41	45.87	0.17	57.26	0.17
22	81.45	0.01			2.79	1.30	30.49	0.52	45.95	0.08	57.51	0.25
23	81.45	0.00			4.08	1.29	31.12	0.63	46.20	0.25	57.68	0.17
24	81.45	0.00			5.18	1.10	31.95	0.83	46.37	0.17	57.76	0.08

Table A-1 (continued)

Hour	Date											
	9/6		9/7		9/8		9/9		10/5		10/6	
	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt
1	57.76	0	65.82	1.49	72.81	0.07	76.19	0.03			0.36	0.14
2	57.84	0.08	66.82	1.00	73.35	0.54	76.19	0			0.50	0 14
3	58.34	0.50	67.07	0.25	73.45	0.10	76.19	0			0.72	0 22
4	59.01	0.67	67.32	0.25	73.49	0.04	76.19	0			0.79	0.07
5	59.59	0.58	67.90	0.58	73.70	0.21	76.19	0			0.93	0.14
6	59.75	0.16	68.32	0.42	73.81	0.11	76.19	0			1.01	0 08
7	60.00	0.25	68.82	0.50	73.88	0.07	76.19	0			1.11	0.10
8	60.17	0.17	68.90	0.08	73.88	0	76.19	0			1.11	0
9	60.25	0.08	69.40	0.50	73.88	0	76.19	0			1.12	0.01
10	60.25	0	69.70	0.30	73.88	0					1.14	0.02
11	60.25	0	70.50	0.80	73.88	0					1.25	0.11
12	60.34	0.09	70.50	0	73.88	0					1.82	0.57
13	60.34	0	70.64	0.14	73.88	0					2.19	0.37
14	60.34	0	70.68	0.04	74.16	0.28					2.20	0.01
15	60.67	0.33	71.10	0.42	74.88	0.72					2.25	0.05
16	61.00	0.33	71.82	0.72	75.30	0.42					3.09	0.84
17	61.00	0	72.31	0.49	75.77	0.47					3.33	0.24
18	61.00	0	72.46	0.15	76.01	0.24					3.33	0
19	61.17	0.17	72.46	0	76.05	0.04					3.33	0
20	61.42	0.25	72.46	0	76.09	0.04						
21	61.58	0.16	72.46	0	76.09	0						
22	61.75	0.17	72.60	0.14	76.12	0.03			0	-		
23	62.00	0.25	72.67	0.07	76.16	0.04			0.14	0.14		
24	64.33	2.33	72.74	0.07	76.16	0			0.22	0.08		

Table A-1 (continued)

	Date											
	11/9		11/10		11/13		12/2		12/3		12/4	
Hour	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt
1					1.439	0			0.300	0	0.695	0
2	0	0			1.439	0			0.300	0	0.695	0
3	0.382	0.382			1.439	0			0.300	0	0.695	0
4	0.611	0.229			1.439	0			0.300	0	0.695	0
5	0.763	0.152			2.367	0.928			0.300	0	0.695	0
6	0.763	0	1.022	0	2.765	0.398			0.300	0	0.695	0
7	0.763	0	1.439	0.417					0.300	0	0.695	0
8	0.763	0					0	0	0.300	0	0.695	0
9	0.867	0.104					0.300	0.300	0.300	0	0.695	0
10	1.022	0.155					0.300	0	0.310	0.010	0.695	0
11							0.300	0	0.320	0.010	0.695	0
12							0.300	0	0.340	0.020	0.795	0.100
13							0.300	0	0.340	0	0.978	0.183
14							0.300	0	0.540	0.200	0.978	0
15							0.300	0	0.576	0.036	0.978	0
16							0.300	0	0.576	0	0.978	0
17							0.300	0	0.576	0	0.978	0
18							0.300	0	0.695	0.119	0.978	0
19							0.300	0	0.695	0	0.978	0
20							0.300	0	0.695	0	0.978	0
21							0.300	0	0.695	0	0.978	0
22							0.300	0	0.695	0	0.978	0
23							0.300	0	0.695	0	0.978	0
24							0.300	0	0.695	0	0.978	0

Table A-1 (continued)

Hour	Date 12/5 m	12/5 Δm/Δt	12/6 m	12/6 Δm/Δt	12/7 m	12/7 Δm/Δt	12/8 m	12/8 Δm/Δt	12/9 m	12/9 Δm/Δt	12/10 m	12/10 Δm/Δt
1	0.978	0	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0
2	1.028	0.050	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0
3	1.028	0	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0
4	1.028	0	1.028	0	1.099	0	1.149	0	1.565	0.416	1.623	0
5	1.028	0	1.028	0	1.099	0	1.149	0	1.565	0	1.623	0
6	1.028	0	1.028	0	1.099	0	1.149	0	1.565	0	1.623	0
7	1.028	0	1.099	0.071	1.099	0	1.149	0	1.565	0	1.623	0
8	1.028	0	1.099	0	1.099	0	1.149	0	1.565	0		
9	1.028	0	1.099	0	1.099	0	1.149	0	1.565	0		
10	1.028	0	1.099	0	1.099	0	1.149	0	1.565	0		
11	1.028	0	1.099	0	1.099	0	1.149	0	1.565	0		
12	1.028	0	1.099	0	1.099	0	1.149	0	1.585	0.020		
13	1.028	0	1.099	0	1.149	0.050	1.149	0	1.623	0.038		
14	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
15	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
16	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
17	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
18	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
19	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
20	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
21	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
22	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
23	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		
24	1.028	0	1.099	0	1.149	0	1.149	0	1.623	0		

Table A-1 (continued)

Hour	1/6		1/7		1/8		1/9		1/10		1/11	
	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt
1			0.133	0	0.290	0	0.290	0	0.500	0	2.309	0
2			0.133	0	0.290	0	0.290	0	0.500	0	2.309	0
3			0.133	0	0.290	0	0.290	0	0.500	0	2.309	0
4			0.133	0	0.290	0	0.290	0	0.500	0	2.309	0
5			0.133	0	0.290	0	0.290	0	0.500	0	2.309	0
6			0.133	0	0.290	0	0.290	0	1.711	1.211	2.309	0
7			0.133	0	0.290	0	0.290	0	1.954	0.243	2.309	0
8			0.133	0	0.290	0	0.290	0	1.954	0	2.309	0
9			0.133	0	0.290	0	0.290	0	1.954	0	2.309	0
10			0.133	0	0.290	0	0.290	0	1.954	0	2.309	0
11			0.133	0	0.290	0	0.290	0	1.954	0	2.309	0
12			0.133	0	0.290	0	0.290	0	1.954	0	2.604	0.295
13			0.133	0	0.290	0	0.290	0	1.954	0	3.267	0.663
14			0.133	0	0.290	0	0.360	0.070	1.954	0	3.267	0
15			0.133	0	0.290	0	0.500	0.140	1.954	0	3.267	0
16			0.133	0	0.290	0	0.500	0	1.954	0	3.267	0
17	0	0	0.290	0.157	0.290	0	0.500	0	1.954	0	3.267	0
18	0.133	0.133	0.290	0	0.290	0	0.500	0	1.954	0	3.267	0
19	0.133	0	0.290	0	0.290	0	0.500	0	1.954	0	3.267	0
20	0.133	0	0.290	0	0.290	0	0.500	0	1.954	0	3.267	0
21	0.133	0	0.290	0	0.290	0	0.500	0	1.954	0	3.267	0
22	0.133	0	0.290	0	0.290	0	0.500	0	2.309	0.355	3.267	0
23	0.133	0	0.290	0	0.290	0	0.500	0	2.309	0	3.267	0
24	0.133	0	0.290	0	0.290	0	0.500	0	2.309	0	3.267	0

Table A-1 (concluded)

Hour	Date 1/12 m	1/12 Δm/Δt	1/13 m	1/13 Δm/Δt	1/14 m	1/14 Δm/Δt	1/15 m	1/15 Δm/Δt	1/16 m	1/16 Δm/Δt
1	3.267	0	3.695	0	3.695	0	3.695	0	3.695	0
2	3.267	0	3.695	0	3.695	0	3.695	0	4.466	0.771
3	3.267	0	3.695	0	3.695	0	3.695	0	5.847	1.381
4	3.267	0	3.695	0	3.695	0	3.695	0	5.909	0.062
5	3.267	0	3.695	0	3.695	0	3.695	0	5.970	0.061
6	3.267	0	3.695	0	3.695	0	3.695	0	6.010	0.040
7	3.267	0	3.695	0	3.695	0	3.695	0	6.042	0.032
8	3.267	0	3.695	0	3.695	0	3.695	0	7.188	1.146
9	3.267	0	3.695	0	3.695	0	3.695	0	7.633	0.445
10	3.267	0	3.695	0	3.695	0	3.695	0	7.633	0
11	3.267	0	3.695	0	3.695	0	3.695	0	7.633	0
12	3.267	0	3.695	0	3.695	0	3.695	0	7.633	0
13	3.267	0	3.695	0	3.695	0	3.695	0	7.633	0
14	3.267	0	3.695	0	3.695	0	3.695	0	7.633	0
15	3.517	0.250	3.695	0	3.695	0	3.695	0	7.633	0
16	3.695	0.178	3.695	0	3.695	0	3.695	0	7.633	0
17	3.695	0	3.695	0	3.695	0	3.695	0	7.633	0
18	3.695	0	3.695	0	3.695	0	3.695	0	7.654	0.021
19	3.695	0	3.695	0	3.695	0	3.695	0	7.654	0
20	3.695	0	3.695	0	3.695	0	3.695	0	7.654	0
21	3.695	0	3.695	0	3.695	0	3.695	0	7.654	0
22	3.695	0	3.695	0	3.695	0	3.695	0	7.654	0
23	3.695	0	3.695	0	3.695	0	3.695	0	7.654	0
24	3.695	0	3.695	0	3.695	0	3.695	0	7.654	0

Table A-2

SUMMARY, FROM DEW BALANCE RECORDS, OF ESTIMATED HOURLY DEPOSITION RATES AND WEIGHT ACCUMULATION OF CENIZA-ARENA PARTICLES AT PLOT NO. 2

Note: m, in gm/sq ft, is the total surface density of ceniza-arena deposited up to a given date and hour for each sampling period; $\Delta m/\Delta t$, in gm/sq ft per hour, is the amount of ceniza-arena deposited in the hour preceding the indicated hour.

Table A-2

Hour	Date 6/15 m	6/15 Δm/Δt	6/16 m	6/16 Δm/Δt	6/17 m	6/17 Δm/Δt	6/18 m	6/18 Δm/Δt	6/19 m	6/19 Δm/Δt	6/20 m	6/20 Δm/Δt
1			7.87	0.08	8.96	0.08	24.56	0	53.51	0	68.09	0.59
2			7.92	0.05	9.05	0.09	24.56	0	53.51	0	68.13	0.04
3			8.00	0.08	9.09	0.04	24.60	0.04	55.00	1.49	68.18	0.05
4			8.08	0.08	10.34	1.25	24.60	0	56.85	1.85	68.18	0
5			8.12	0.04	10.51	0.17	24.65	0.05	57.50	0.65	68.18	0
6			8.16	0.04	10.64	0.13	24.65	0	57.95	0.45	68.22	0.04
7			8.21	0.05	10.80	0.16	27.50	2.85	57.95	0	68.62	0.40
8			8.25	0.04	10.97	0.17	34.64	7.14	57.95	0	68.62	0
9			8.25	0	10.97	0	37.50	2.86	57.95	0	68.76	0.14
10			8.25	0	10.97	0	39.08	1.58	58.35	0.40	68.92	0.16
11			8.25	0	10.97	0	40.20	1.12	59.11	0.76	69.07	0.15
12			8.25	0	10.97	0	41.30	1.10	59.33	0.22	69.07	0
13			8.25	0	10.97	0	41.80	0.50	59.38	0.05		
14			8.25	0	10.97	0	42.41	0.61	60.81	1.43		
15			8.25	0	10.97	0	45.50	3.09	60.90	0.09		
16	0	0	8.25	0	10.97	0	47.91	2.47	61.30	0.40		
17	0.04	0.04	8.25	0	10.97	0	49.80	1.83	61.52	0.22		
18	0.50	0.46	8.46	0.21	12.39	1.42	50.18	0.38	63.80	2.28		
19	1.55	1.05	8.63	0.17	12.39	0	52.50	2.32	66.57	2.77		
20	2.76	1.21	8.67	0.04	12.39	0	53.51	1.01	66.70	0.13		
21	3.73	0.97	8.71	0.04	15.45	3.06	53.51	0	67.06	0.36		
22	4.86	1.13	8.80	0.09	19.23	3.78	53.51	0	67.46	0.40		
23	7.70	2.84	8.84	0.04	24.51	5.28	53.51	0	67.50	0.04		
24	7.79	0.09	8.88	0.04	24.56	0.05	53.51	0	67.50	0		

Table A-2 (continued)

Hour	Date											
	7/14		7/15		7/16		7/17		7/18		7/19	
	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt
1			4.11	0.32	11.62	0.24	21.16	0	36.80	0.15	49.98	0.15
2			4.56	0.45	11.85	0.23	21.16	0	36.87	0.07	50.02	0.04
3			4.82	0.26	11.91	0.06	21.16	0	37.02	0.15	50.19	0.17
4			5.07	0.25	12.03	0.12	21.16	0	37.09	0.07	50.26	0.07
5			5.33	0.26	12.09	0.06	21.16	0	37.16	0.07	50.34	0.08
6			5.71	0.38	12.15	0.06	21.16	0	37.31	0.15	50.41	0.07
7			6.03	0.32	12.21	0.06	21.16	0	37.45	0.14	50.48	0.07
8			6.29	0.26	15.33	3.12	21.16	0	37.45	0	50.48	0
9			6.42	0.13	16.45	1.12	21.16	0	37.45	0	50.48	0
10			6.42	0	17.33	0.88	21.16	0	39.84	2.39	50.48	0
11			6.42	0	19.04	1.71	21.16	0	42.52	2.68	50.48	0
12			6.42	0	19.22	0.18	21.30	0.14	42.81	0.29	50.48	0
13	0	0	6.42	0	19.28	0.06	25.50	4.20	42.81	0	50.48	0
14	0	0	6.42	0	19.28	0	28.11	2.61	42.81	0	50.48	0
15	0	0	8.04	1.62	19.28	0	29.27	1.16	42.81	0	50.48	0
16	0	0	9.26	1.22	19.28	0	29.63	0.36	42.81	0	50.48	0
17	0	0	9.62	0.36	20.51	1.23	31.15	1.52	42.81	0	50.48	0
18	0	0	10.26	0.64	21.16	0.65	33.03	1.88	48.02	5.21	50.48	0
19	0.26	0.26	10.62	0.36	21.16	0	35.50	2.47	48.82	0.80	50.48	0
20	0.39	0.13	10.85	0.23	21.16	0	36.00	0.50	49.11	0.29	50.48	0
21	0.51	0.12	11.03	0.18	21.16	0	36.15	0.15	49.47	0.36	50.48	0
22	2.70	2.19	11.15	0.12	21.16	0	36.29	0.14	49.61	0.14	50.48	0
23	3.21	0.51	11.26	0.11	21.16	0	36.36	0.07	49.69	0.08	50.48	0
24	3.79	0.58	11.38	0.12	21.16	0	36.65	0.29	49.83	0.14	50.48	0

Table A-2 (continued)

Hour	Date 7/20 m	7/20 Δm/Δt	7/21 m	7/21 Δm/Δt	8/10 m	8/10 Δm/Δt	8/11 m	8/11 Δm/Δt	8/12 m	8/12 Δm/Δt	8/13 m	8/13 Δm/Δt
1	50.48	0	52.47	0.11			1.92	0.63	10.65	0.40	27.90	0.20
2	50.48	0	52.59	0.12			2.78	0.86	10.89	0.24	28.06	0.16
3	50.48	0	52.59	0			3.36	0.58	11.13	0.24	28.18	0 12
4	50.48	0	52.59	0			3.82	0.46	11.54	0.41	28.31	0.13
5	50.48	0	52.59	0			4.07	0.25	12.50	0.96	28.43	0.12
6	50.48	0	52.59	0			4.40	0.33	16.77	4.27	28.51	0 08
7	50.48	0	52.59	0			4.81	0.41	20.55	3.78	28.55	0.04
8	50.48	0	52.59	0			5.42	0.61	20.99	0.44	31.03	2.48
9	50.48	0	52.59	0			5.47	0.05	21.42	0.43	31.03	0
10	50.48	0	52.59	0	0	0	6.06	0.59	21.60	0.18	31.03	0
11	50.48	0			0.60	0.60	6.55	0.49	21.70	0.10	31.03	0
12	50.48	0			0.84	0.24	6.87	0.32	21.79	0.09	31.03	0
13	50.48	0			0.84	0	6.95	0.08	21.88	0.09	32.64	1.61
14	50.48	0			0.84	0	7.03	0.08	21.88	0	33.00	0.36
15	50.48	0			0.84	0	7.03	0	21.92	0.04	33.56	0.56
16	50.48	0			0.84	0	7.11	0.08	22.08	0.16	33.80	0.24
17	50.71	0.23			0.84	0	7.19	0.08	22.29	0.21	33 80	0
18	51.07	0.36			0.84	0	7.35	0.16	22.90	0 61	33.84	0.04
19	51.36	0.29			0.84	0	7.59	0.24	23.18	0.28	33.88	0.04
20	51.59	0.23			0.84	0	7.83	0.24	23.71	0.53	34.04	0.16
21	51.83	0.24			0.84	0	8.00	0.17	23.95	0.24	34.24	0.20
22	52.06	0.23			0.84	0	8.96	0.96	24.52	0.57	34.36	0.12
23	52.18	0.12			1.00	0.16	9.69	0.73	26.96	2.44	34.45	0.09
24	52.36	0.18			1.29	0.29	10.25	0.56	27.70	0.74	34.49	0.04

Table A-2 (continued)

Hour	Date											
	8/14		8/15		8/16		9/2		9/3		9/4	
	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt
1	34.53	0.04	36.42	0.04	37.42	0.12			4.85	0	9.94	0.71
2	34.57	0.04	36.46	0.04	37.58	0.16			4.97	0.12	10.65	0.71
3	34.61	0.04	36.46	0	37.67	0.09			4.97	0	11.13	0 48
4	34.65	0.04	36.46	0	37.75	0.08			4.97	0	11.72	0.59
5	34.69	0.04	36.46	0	37.79	0.04			4.97	0	12.31	0.59
6	34.73	0.04	36.46	0	37.83	0.04			5.08	0.11	12.90	0.59
7	34.77	0.04	36.46	0	37.87	0.04			5.21	0.13	13.30	0.40
8	34.77	0	36.46	0	37.90	0.03			5.21	0	13.41	0.11
9	34.77	0	36.46	0	37.90	0			5.21	0	13.41	0
10	34.77	0	36.46	0	37.90	0			5.21	0	13.41	0
11	34.77	0	36.46	0					5.21	0	13.41	0
12	34.77	0	36.46	0			0	0	5.21	0	13.41	0
13	34.77	0	36.46	0			0.35	0.35	5.21	0	13.41	0
14	34.85	0.08	36.46	0			0.95	0.60	5.21	0	13.41	0
15	35.25	0.40	36.46	0			1.54	0.59	5.21	0	13.41	0
16	35.53	0.28	37.10	0.64			2.25	0.71	5.45	0.24	13 41	0
17	35.61	0.08	37.14	0.04			2.96	0.71	6.16	0.71	16.17	2.76
18	35.69	0 08	37.18	0.04			3.43	0.47	6 39	0.23	16 47	0.30
19	35.73	0.04	37.20	0.02			4.02	0.59	6.51	0.12	16.76	0.29
20	35.98	0.25	37.22	0.02			4.14	0.12	6.63	0.12	17.17	0.41
21	36.14	0.16	37.23	0.01			4.38	0.24	6.98	0.35	17.29	0.12
22	36.30	0.16	37.24	0.01			4.61	0.23	7.69	0.71	17.47	0 18
23	36.34	0.04	37.26	0.02			4.73	0.12	8.52	0.83	17.58	0.11
24	36.38	0.04	37.30	0.04			4.85	0.12	9.23	0.71	17.70	0.12

Table A-2 (continued)

Hour	Date 9/5 m	9/5 Δm/Δt	9/6 m	9/6 Δm/Δt	9/7 m	9/7 Δm/Δt	9/8 m	9/8 Δm/Δt	11/9 m	11/9 Δm/Δt	11/10 m	11/10 Δm/Δt
1	17.82	0.12	18.64	0.12	23.99	0.42	(53.9)	(0.5)				
2	17.88	0.06	18.70	0.06	24.21	0.22	(54.3)	(0.4)	0	0		
3	17.94	0.06	18.88	0.18	24.84	0.63	(54.6)	(0.3)	0	0		
4	18.05	0.11	19.87	0.99	25.06	0.22	(54.7)	(0.1)	0.325	0.325		
5	18.11	0.06	20.17	0.30	25.48	0.42	(54.76)	(0.06)	0.487	0.162		
6	18.17	0.06	20.40	0.23	26.01	0.53	(54.76)	0	0.487	0	0.487	0
7	18.23	0.06	20.58	0.18	26.97	0.96	(54.76)	0	0.487	0	0.487	0
8	18.23	0	20.64	0.06	27.50	0.53	(54.76)	0	0.487	0		
9	18.23	0	20.70	0.06	29.63	2.13	(54.76)	0	0.487	0		
10	18.23	0	20.70	0	30.69	1.06	(54.76)	0	0.487	0		
11	18.23	0	20.70	0	31.75	1.06	(54.76)	0				
12	18.23	0	20.70	0	32.50	0.75	(54.76)	0				
13	18.23	0	20.70	0	32.55	0.05	(54.76)	0				
14	18.23	0	20.70	0	32.55	0	(54.76)	0				
15	18.23	0	20.70	0	32.55	0	54.76	0				
16	18.23	0	20.70	0	32.55	0						
17	18.23	0	20.70	0	32.71	0.16						
18	18.23	0	20.91	0.21	34.83	2.12						
19	18.23	0	21.02	0.11	37.81	2.98						
20	18.23	0	21.23	0.21	47.27	9.46						
21	18.23	0	21.44	0.21	(50.3)	(3.00)						
22	18.35	0.12	21.87	0.43	(51.8)	(1.50)						
23	18.46	0.11	22.83	0.96	(52.8)	(1.00)						
24	18.52	0.06	23.57	0.74	(53.4)	(0.60)						

Table A-2 (continued)

Hour	Date											
	11/13		12/2		12/3		12/4		12/5		12/6	
	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt	m	Δm/Δt
1	0.487	0			0.345	0	0.345	0	0.345	0	1.039	0
2	1.364	0.877			0.345	0	0.345	0	0.345	0	1.039	0
3	1.891	0.527			0.345	0	0.345	0	0.345	0	1.039	0
4	2.242	0.351			0.345	0	0.345	0	0.345	0	1.039	0
5	2.242	0			0.345	0	0.345	0	0.345	0	1.039	0
6	2.242	0			0.345	0	0.345	0	0.345	0	1.039	0
7					0.345	0	0.345	0	0.595	0.250	1.439	0.400
8					0.345	0	0.345	0	0.859	0.264	1.741	0.302
9					0.345	0	0.345	0	0.859	0	1.741	0
10					0.345	0	0.345	0	0.959	0.100	1.741	0
11					0.345	0	0.345	0	1.039	0.080	1.741	0
12					0.345	0	0.345	0	1.039	0	1.741	0
13					0.345	0	0.345	0	1.039	0	1.741	0
14					0.345	0	0.345	0	1.039	0	1.741	0
15					0.345	0	0.345	0	1.039	0	1.741	0
16			0	0	0.345	0	0.345	0	1.039	0	1.741	0
17			0.276	0.276	0.345	0	0.345	0	1.039	0	1.741	0
18			0.345	0.069	0.345	0	0.345	0	1.039	0	1.741	0
19			0.345	0	0.345	0	0.345	0	1.039	0	1.741	0
20			0.345	0	0.345	0	0.345	0	1.039	0	1.741	0
21			0.345	0	0.345	0	0.345	0	1.039	0	1.741	0
22			0.345	0	0.345	0	0.345	0	1.039	0	1.741	0
23			0.345	0	0.345	0	0.345	0	1.039	0	1.741	0
24			0.345	0	0.345	0	0.345	0	1.039	0	1.741	0

Table A-2 (continued)

Hour	Date 12/7 m	12/7 Δm/Δt	12/8 m	12/8 Δm/Δt	12/9 m	12/9 Δm/Δt	12/10 m	12/10 Δm/Δt	1/7 m	1/7 Δm/Δt	1/8 m	1/8 Δm/Δt
1	1.741	0	1.966	0	2.461	0	2.668	0			2.363	0.129
2	1.741	0	1.966	0	2.461	0	2.668	0			2.578	0.215
3	1.741	0	2.066	0.100	2.461	0	2.668	0			2.836	0.258
4	1.741	0	2.146	0.080	2.461	0	2.668	0			2.836	0
5	1.866	0.125	2.226	0.080	2.461	0	2.668	0			2.836	0
6	1.966	0.100	2.306	0.080	2.461	0	2.668	0			2.836	0
7	1.966	0	2.306	0	2.568	0.107	2.936	0.268	0	0	2.836	0
8	1.966	0	2.306	0	2.568	0	2.936	0	0.086	0.086	2.836	0
9	1.966	0	2.306	0	2.568	0	2.936	0	0.516	0.430	2.836	0
10	1.966	0	2.306	0	2.568	0			0.902	0.386	3.361	0.525
11	1.966	0	2.406	0.100	2.568	0			1.117	0.215	3.361	0
12	1.966	0	2.461	0.055	2.568	0			1.375	0.258	3.361	0
13	1.966	0	2.461	0	2.628	0.060			1.590	0.215	3.361	0
14	1.966	0	2.461	0	2.628	0			1.676	0.086	3.361	0
15	1.966	0	2.461	0	2.628	0			1.848	0.172	3.361	0
16	1.966	0	2.461	0	2.628	0			1.977	0.131	3.361	0
17	1.966	0	2.461	0	2.658	0.030			1.977	0	3.361	0
18	1.966	0	2.461	0	2.668	0.010			1.977	0	3.361	0
19	1.966	0	2.461	0	2.668	0			1.977	0	3.361	0
20	1.966	0	2.461	0	2.668	0			2.020	0.043	3.361	0
21	1.966	0	2.461	0	2.668	0			2.063	0.043	3.753	0.392
22	1.966	0	2.461	0	2.668	0			2.063	0	4.488	0.735
23	1.966	0	2.461	0	2.668	0			2.148	0.085	4.831	0.343
24	1.966	0	2.461	0	2.668	0			2.234	0.086	5.076	0.245

Table A-2 (concluded)

Hour	Date 1/9 m	1/9 Δm/Δt	1/10 m	1/10 Δm/Δt	1/11 m	1/11 Δm/Δt	1/12 m	1/12 Δm/Δt	1/13 m	1/13 Δm/Δt
1	5.174	0.098	6.100	0.293	6.490	0	7.448	0	8.127	0
2	5.272	0.098	6.430	0.390	6.490	0	7.448	0	8.127	0
3	5.370	0.098	6.430	0	6.490	0	7.448	0	8.127	0
4	5.419	0.049	6.430	0	6.796	0.306	7.448	0	8.127	0
5	5.466	0.047	6.430	0	7.448	0.652	7.595	0.147	8.315	0.188
6	5.466	0	6.430	0	7.448	0	7.810	0.215	8.471	0.156
7	5.466	0	6.430	0	7.448	0	7.810	0	8.471	0
8	5.466	0	6.430	0	7.448	0	7.810	0	8.471	0
9	5.466	0	6.430	0	7.448	0	7.810	0	8.471	0
10	5.466	0	6.430	0	7.448	0	7.810	0	8.471	0
11	5.466	0	6.430	0	7.448	0	7.810	0	8.471	0
12	5.466	0	6.430	0	7.448	0	7.810	0		
13	5.466	0	6.430	0	7.448	0	7.810	0		
14	5.466	0	6.430	0	7.448	0	7.810	0		
15	5.466	0	6.430	0	7.488	0	7.810	0		
16	5.466	0	6.430	0	7.448	0	7.810	0		
17	5.466	0	6.430	0	7.448	0	7.810	0		
18	5.466	0	6.430	0	7.448	0	7.810	0		
19	5.466	0	6.430	0	7.448	0	7.810	0		
20	5.466	0	6.430	0	7.448	0	7.810	0		
21	5.466	0	6.430	0	7.448	0	8.021	0.211		
22	5.466	0	6.430	0	7.448	0	8.127	0.106		
23	5.466	0	6.430	0	7.448	0	8.127	0		
24	5.807	0.341	6.430	0	7.448	0	8.127			

Table A-3

TABULATION OF OBSERVED AND REPORTED DAILY ERUPTIONS
OF VOLCAN IRAZU FROM APRIL 1964 THROUGH FEBRUARY 1965

	APRIL				MAY			
	Cloud Type				Cloud Type			
Day	White	Tan	Black	Total	White	Tan	Black	Total
1	5	5	0	10	6	8	0	14
2	2	8	1	11	2	15	0	17
3	5	7	1	13	10	10	3	23
4	0	2	9	11	9	2	3	14
5	1	7	4	12	8	0	2	10
6	0	3	9	12	5	2	4	11
7	0	0	3	3	0	0	0	0
8	0	6	4	10	0	0	0	0
9	0	3	3	6	0	0	0	0
10	0	7	1	8	0	0	0	0
11	0	1	2	3	0	0	0	0
12	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0
15	0	0	0	0	5	1	5	11
16	0	0	0	0	5	3	1	9
17	0	0	0	0	3	1	3	7
18	0	0	0	0	2	5	5	12
19	0	0	0	0	19	0	2	21
20	0	0	0	0	8	14	0	22
21	0	0	0	0	14	6	0	20
22	0	0	0	0	16	0	0	16
23	3	9	1	13	12	0	0	12
24	15	3	4	22	14	2	0	16
25	2	17	3	22	9	3	0	12
26	0	0	24	24	10	4	0	14
27	0	0	24	24	7	6	0	13
28	4	3	17	24	11	1	0	12
29	2	10	7	19	1	10	1	12
30	5	9	0	14	0	9	3	12
31					10	2	0	12
Total	44	100	117	261	186	104	32	322
Average No/Day	1.5	3.3	3.9	8.7	6.0	3.4	1.0	10.4
Fraction of Type	0.17	0.38	0.45	-	0.58	0.32	0.10	-
Fraction of Days Active	0.33	0.53	0.57	0.63	0.71	0.61	0.35	0.74

Table A-3 (continued)

	JUNE				JULY			
	Cloud Type				Cloud Type			
Day	White	Tan	Black	Total	White	Tan	Black	Total
1	0	0	9	9				
2	1	1	9	11	0	1	0	1
3	1	4	7	12	0	13	0	13
4	1	3	3	7	0	10	0	10
5	3	0	4	7		Data Missing		
6	4	5	3	12				
7	3	7	1	11				
8	4	7	1	12				
9	10	1	1	12				
10	7	2	1	10				
11	4	7	2	13				
12	12	8	0	20				
13	19	4	0	23				
14	0	24	0	24				
15	8	15	0	23				
16	3	11	11	25				
17	7	5	5	17				
18	7	3	11	21				
19	3	2	14	19				
20	8	6	2	16				
21	5	0	2	7				
22	8	3	2	13				
23	7	1	10	18	2	0	0	2
24	1	16	0	17	8	2	0	10
25	2	19	0	21	6	1	0	7
26	8	17	0	25	8	2	0	10
27	1	25	0	26	5	8	0	13
28	2	14	1	17	3	6	1	10
29	10	10	0	20	2	5	0	7
30	3	3	0	6	4	4	0	8
31					5	9	0	14
Total	152	223	99	474	43	61	1	105
Average Number per Day	5.1	7.4	3.3	15.8	(3.6)	(5.1)	(0.08)	(8.8)
Fraction of Type	0.33	0.48	0.21	-	(0.41)	(0.58)	(0.01)	-
Fraction of Days Active	0.93	0.90	0.67	1.00	-	-	-	-

Table A-3 (continued)

	AUGUST				SEPTEMBER			
	Cloud Type				Cloud Type			
Day	White	Tan	Black	Total	White	Tan	Black	Total
1	2	2	0	4	0	0	0	0
2	0	3	1	4	9	12	3	24
3	1	5	0	6	9	8	2	19
4	2	1	0	3	9	1	13	23
5	5	9	0	14	5	0	11	16
6	1	5	0	6	7	4	10	21
7	2	2	0	4	9	0	12	21
8	0	0	0	0	8	9	8	25
9	0	2	0	2	6	10	1	17
10	2	1	0	3	15	11	2	28
11	6	5	2	13	12	8	5	25
12	2	10	6	18	1	9	6	16
13	0	6	1	7	3	12	3	18
14	9	10	7	26	12	11	4	27
15	11	6	1	18	15	4	0	19
16	6	11	1	18	15	0	3	18
17	15	2	0	17	21	4	0	25
18	6	21	9	36	11	2	0	13
19	7	30	5	42	16	8	0	24
20	0	12	23	35	20	3	2	25
21	12	1	2	15	8	4	10	22
22	0	1	0	1	16	7	1	24
23	1	4	0	5	7	3	14	24
24	4	2	0	6	4	6	6	16
25	3	2	0	5	11	2	2	15
26	5	11	0	16	8	5	2	15
27	0	8	0	8	13	2	1	16
28	5	1	0	6	5	5	1	11
29	2	2	0	4	17	1	0	18
30	0	1	0	1	20	18	0	38
31	2	3	0	5				
Total	111	179	58	348	312	169	122	603
Average Number per Day	3.6	5.8	1.9	11.2	10.4	5.6	4.1	20.1
Fraction of Type	0.32	0.51	0.17	-	0.52	0.28	0.20	-
Fraction of Days Active	0.74	0.97	0.35	0.97	0.97	0.87	0.77	0.97

Table A-3 (continued)

	OCTOBER				NOVEMBER			
	Cloud Type				Cloud Type			
Day	White	Tan	Black	Total	White	Tan	Black	Total
1	16	14	1	31	4	14	0	18
2	16	9	0	25	6	1	0	7
3	19	2	0	21	8	8	0	16
4	23	6	3	32	10	20	0	30
5	15	13	0	28	12	18	0	30
6	12	7	3	22	17	13	0	30
7	7	16	6	29	11	11	0	22
8	11	5	7	23	11	4	0	15
9	3	14	9	26	14	1	0	15
10	9	0	1	10	14	2	0	16
11	16	6	0	22	11	9	0	20
12	8	8	7	23	8	8	1	17
13	3	20	0	23	14	4	0	18
14	16	14	1	31	15	4	0	19
15	17	7	0	24	1	0	0	1
16	25	11	0	36	6	1	0	7
17	21	11	0	32	9	10	0	19
18	8	8	0	16	16	5	0	21
19	9	8	0	17	7	5	0	12
20	10	1	0	11	11	10	0	21
21	6	9	2	17	8	11	0	19
22	13	12	3	28	8	2	0	10
23	16	9	0	25	1	1	0	2
24	10	5	0	15	7	7	0	14
25	8	12	0	20	6	8	2	16
26	14	5	0	19	5	2	6	13
27	7	5	0	12	6	4	2	12
28	20	17	0	37	13	6	2	21
29	16	11	0	27	6	6	3	15
30	10	15	0	25	5	3	0	8
31	4	6	0	10				
Total	388	286	43	717	270	198	16	484
Average Number per Day	12.5	9.2	1.4	23.1	9.0	6.6	0.5	16.1
Fraction of Type	0.54	0.40	0.06	-	0.56	0.41	0.03	-
Fraction of Days Active	1.00	0.97	0.35	1.00	1.00	0.97	0.20	1.00

Table A-3(continued)

	DECEMBER				JANUARY			
	Cloud Type				Cloud Type			
Day	White	Tan	Black	Total	White	Tan	Black	Total
1	19	8	0	27	14	20	1	35
2	24	1	0	25	9	2	0	11
3	19	10	0	29	23	0	3	26
4	16	4	0	20	9	0	0	9
5	7	2	0	9	6	2	0	8
6	9	3	0	12	1	1	0	2
7	7	5	0	12	1	2	0	3
8	9	15	0	24	9	11	0	20
9	22	1	0	23	4	12	0	16
10	14	4	0	18	7	9	0	16
11	14	14	0	28	19	2	0	21
12	20	11	0	31	14	9	0	23
13	2	2	0	4	11	4	0	15
14	7	0	0	7	3	13	0	16
15	6	7	4	17	5	4	0	9
16	4	18	0	22	2	5	1	8
17	12	7	0	19	4	1	0	5
18	2	7	0	9	0	0	0	0
19	10	9	0	19	5	2	0	7
20	3	2	0	5	13	3	0	16
21	11	6	0	17	12	1	4	17
22	10	5	0	15	3	22	0	25
23	1	22	0	23	7	18	1	26
24	0	26	0	26	10	15	0	25
25	6	18	0	24	12	5	0	17
26	10	16	0	26	8	12	0	20
27	6	20	1	27	12	10	0	22
28	13	12	1	26	3	21	0	24
29	5	20	2	27	2	20	0	22
30	0	19	2	21	5	11	0	16
31	6	10	1	17	4	10	0	14
Total	294	304	11	609	237	247	10	494
Average Number per Day	9.5	9.8	0.35	19.6	7.6	8.0	0.32	15.9
Fraction of Type	0.48	0.50	0.02	-	0.48	0.50	0.02	-
Fraction of days Active	0.94	0.97	0.19	-	0.97	0.90	0.16	-

Table A-3 (concluded)

FEBRUARY

Day	Cloud Type			
	White	Tan	Black	Total
1	9	4	1	14
2	8	0	0	8
3	6	3	0	9
4	15	0	0	15
5	0	0	0	0
6	2	11	0*	13
7	4	5	1	10
8	7	5	1	13
9	5	0	0	5
10	4	0	0	4
11	10	6	0	16
12	9	0	0	9
13	3	1	0	4
14	1	0	0	1
15	2	1	0	3
16	1	0	0	1
17	12	0	0	12
18	10	0	0	10
19	6	0	0	6
20	23	0	0	23
21	3	0	0	3
22	3	0	0	3
Total	143	36	3	182
Average Number per Day	6.5	1.6	0.14	8.2
Fraction of Type	0.78	0.20	0.02	-
Fraction of Days Active	0.95	0.36	0.14	-

*Last large eruption from which a shower of particles occurred in the city of San José.

Figure A-1

VARIATION WITH TIME OF THE MONTHLY ERUPTION RATE OF VOLCAN IRAZU

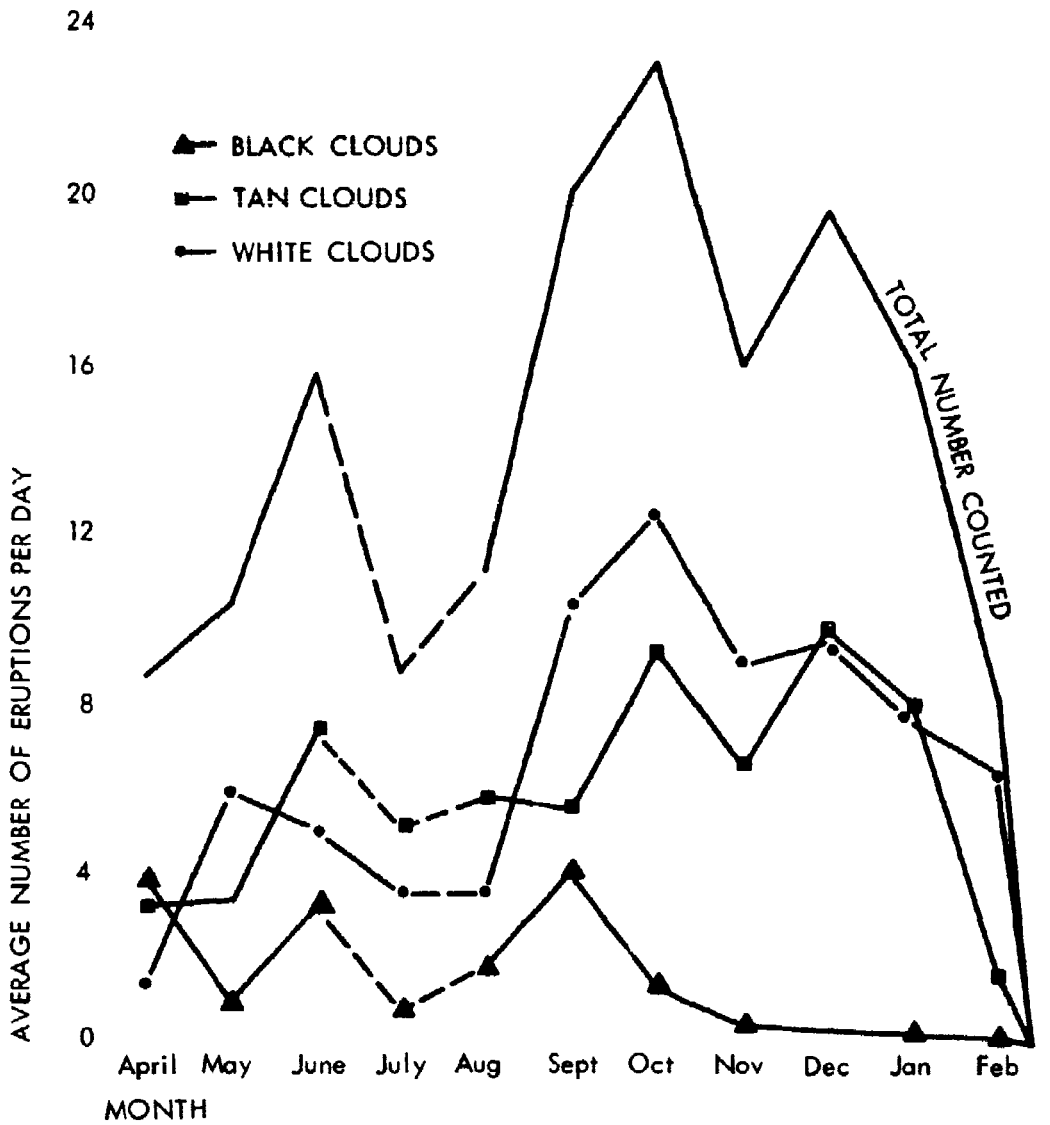


Figure A-2

RELATIVE AVERAGE MONTHLY ABUNDANCE OF CLOUD TYPE FORMED BY THE ERUPTIONS OF VOLCAN IRAZU

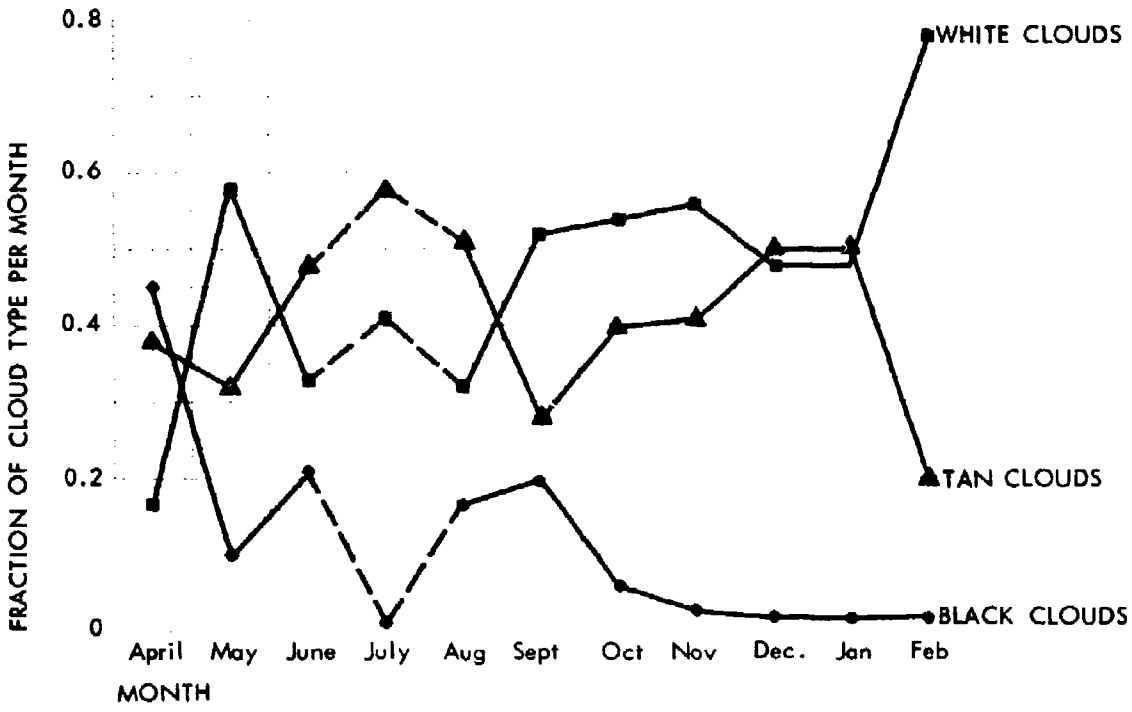


Table A-4

SUMMARY OF PERIODIC HIGH ERUPTIVE ACTIVITY OF VOLCAN IRAZU
PRODUCING DENSE BLACK PARTICLE CLOUDS

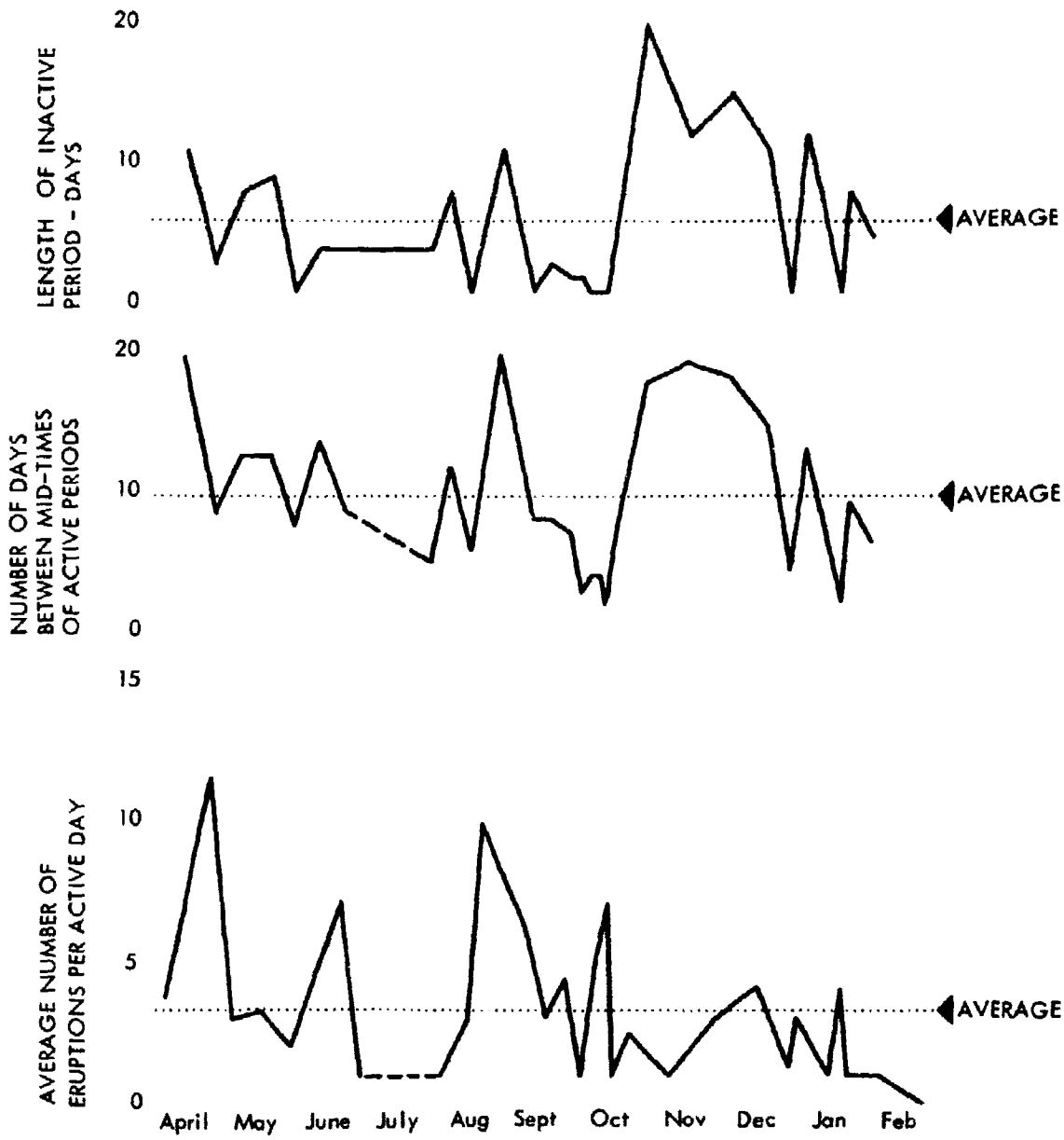
Mid-Date of Active Period	Time Between Mid-Dates (days)	Length of Active Period (days)	Number of Eruptions in Period	Average Number of Eruptions Per Active Day	Length of Inactive Period (days)
4/6.5	-	10	37	3.7	-
4/26	19.5	7	80	11.4	11
5/4.5	8.5	4	12	3.0	3
5/17	12.5	5	16	3.2	8
5/29.5	12.5	2	4	2.0	9
6/6	7.5	11	41	3.7	1
6/19.5	13.5	8	57	7.1	4
6/28	8.5	1	1	1.0	4
7/28	-	1	1	1.0	-
8/2	5.0	1	1	1.0	4
8/13.5	11.5	6	18	3.0	8
8/19.5	6.0	4	39	9.8	1
9/8	19.5	13	80	6.2	11
9/16	8.0	1	3	3.0	1
9/24	8.0	9	39	4.3	3
10/1	7.0	1	1	1.0	2
10/4	3.0	1	3	3.0	2
10/8	4.0	5	26	5.2	1
10/12	4.0	1	7	7.0	1
10/14	2.0	1	1	1.0	1
10/21.5	7.5	2	5	2.5	6
11/8	17.5	1	1	1.0	20

Table A-4 (concluded)

Mid-Date of Active Period	Time Between Mid-Dates (days)	Length of Active Period (days)	Number of Eruptions in Period	Average Number of Eruptions Per Active Day	Length of Inactive Period (days)
11/27	19.0	5	15	3.0	12
12/15	18.0	1	4	4.0	15
12/29.5	14.5	6	8	1.3	11
1/3	4.5	1	3	3.0	1
1/16	13.0	1	1	1.0	12
1/21	5.0	1	4	4.0	4
1/23	2.0	1	1	1.0	1
2/1	9.0	1	1	1.0	8
2/7.5	6.5	2	2	1.0	5
Average	9.6	3.7	16.5	3.3	5.9

Figure A-3

PERIOD DATA ON THE FORMATION OF BLACK CLOUDS



Appendix B

SUMMARY OF METEOROLOGICAL MEASUREMENTS AND DATA

Appendix B

SUMMARY OF METEOROLOGICAL MEASUREMENTS AND DATA

Hygrothermograph records taken at the two land plots during each sampling period are shown in Figures B-1 to B-9. These records are included to substantiate the classification of the meteorological conditions under which the foliar contamination data were obtained.

The rain gauge measurements are summarized in Table B-1 for Plot No. 1 and in Table B-2 for Plot No. 2.

The average hourly surface wind speeds, as read from the recording anemometer charts, are summarized in Tables B-3 and B-4 for Plot No. 1 and Plot No. 2, respectively. The tabulated speeds are uncorrected values, averaged over the time period of one hour starting at 30 minutes before the stated hour and ending 30 minutes after the hour. When the record indicated zero for the whole hour, a wind speed of 0.3 mi/hr was arbitrarily assigned on the basis of smoke-drift measurements taken on several occasions during nighttime hours during the first phase of the operation. Later measurements during the second phase indicated a more frequent occurrence of wind speeds nearer 0.7 mi/hr during calm conditions.

Three series of wind speed measurements taken with a sensitive calibrated hand-held anemometer at Plot No. 1 during the September sampling period are summarized in Table B-5. These data, and others given in the text, were used to obtain the correction curve for the recording anemometer shown in Figure 11. Wind speed data for Stations 15 and 16 are summarized in Table B-6.

Figure B-1
HYGROTHERMOGRAPH CHARTS

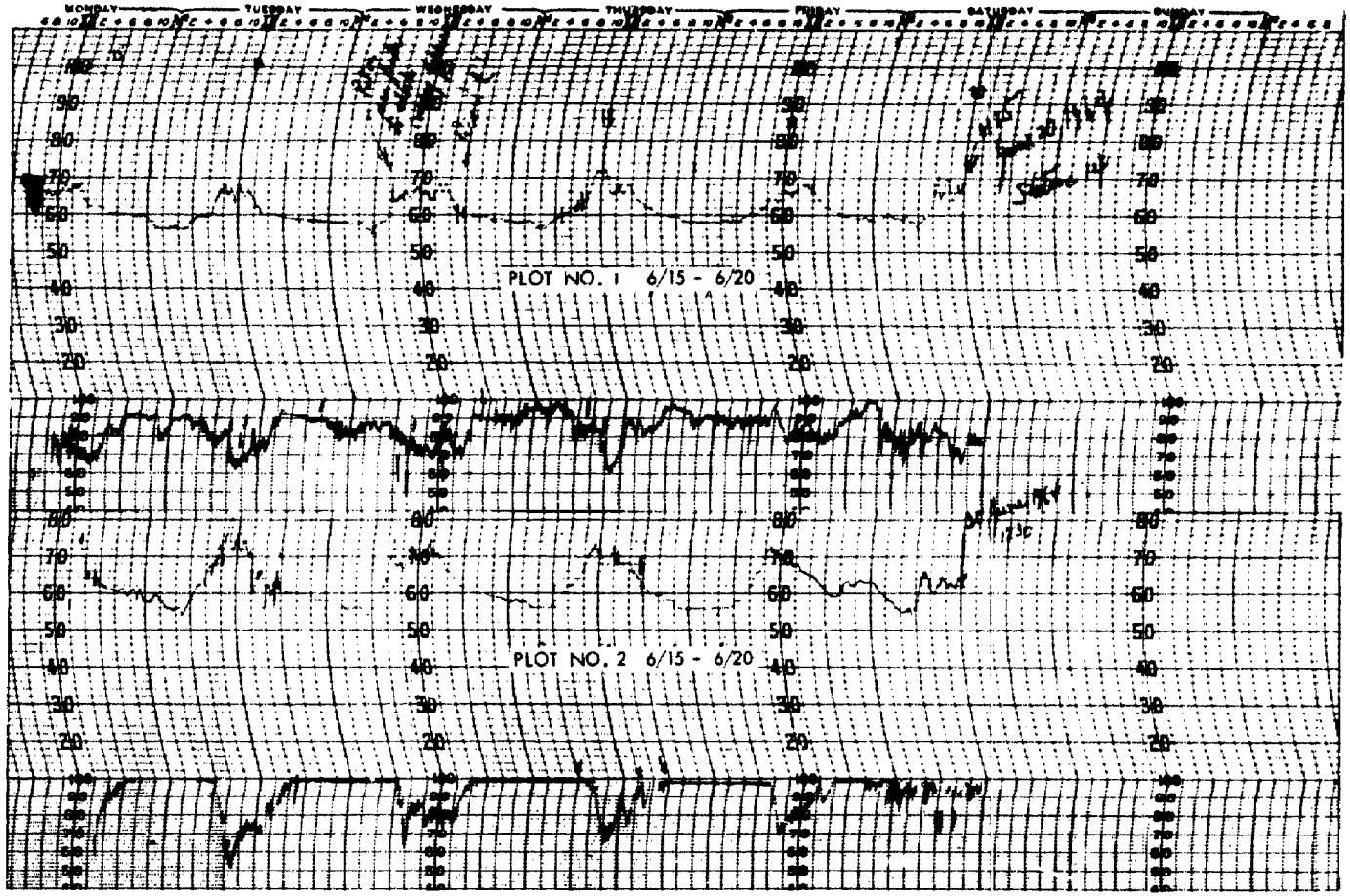


Figure B-2
HYGROTHERMOGRAPH CHARTS

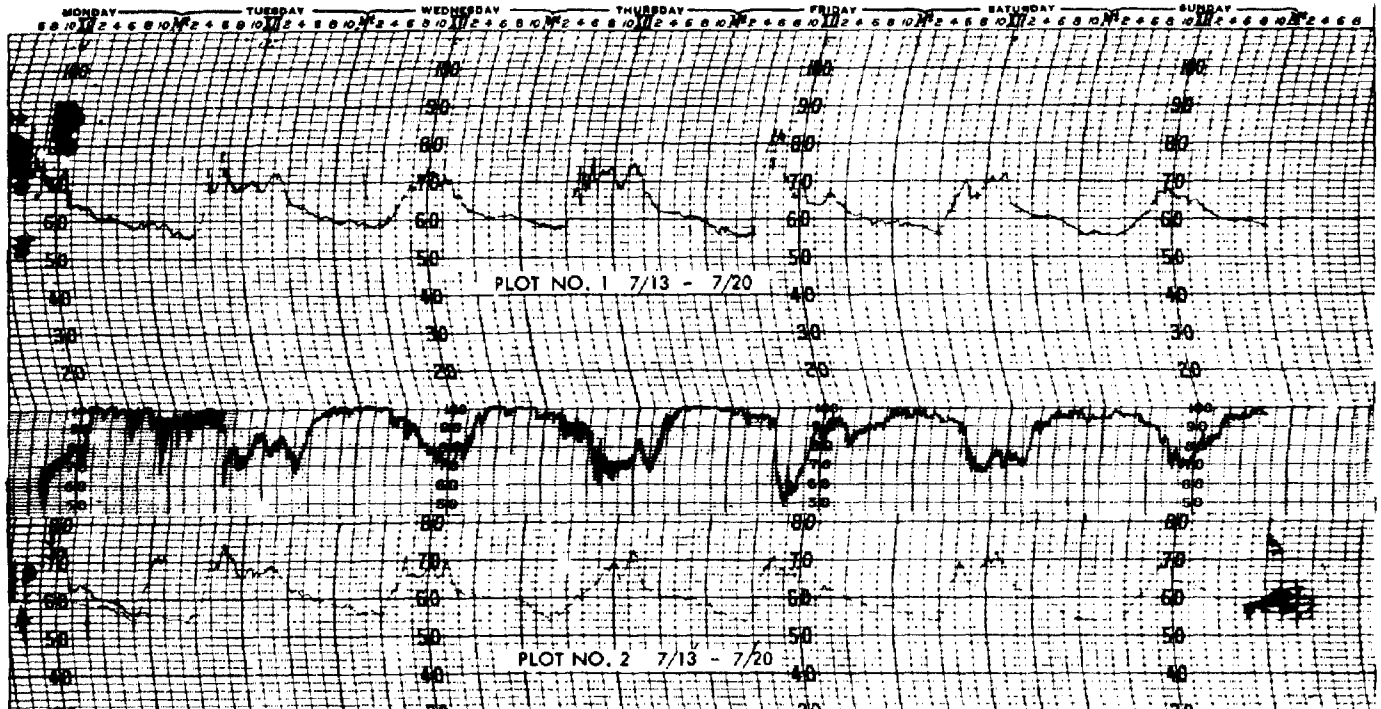


Figure B-3
HYGROTHERMOGRAPH CHARTS

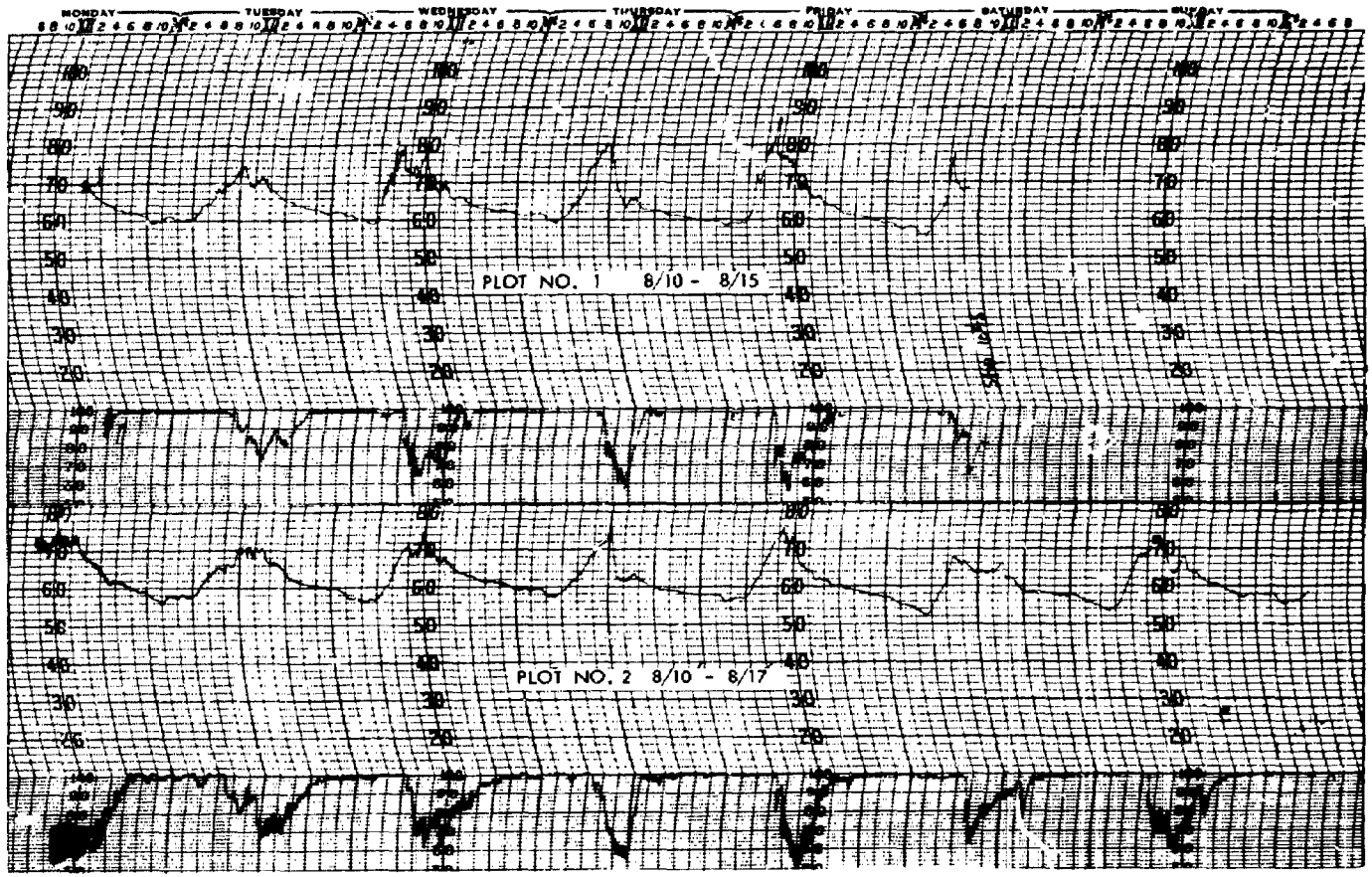


Figure B-4
HYGROTHERMOGRAPH CHARTS

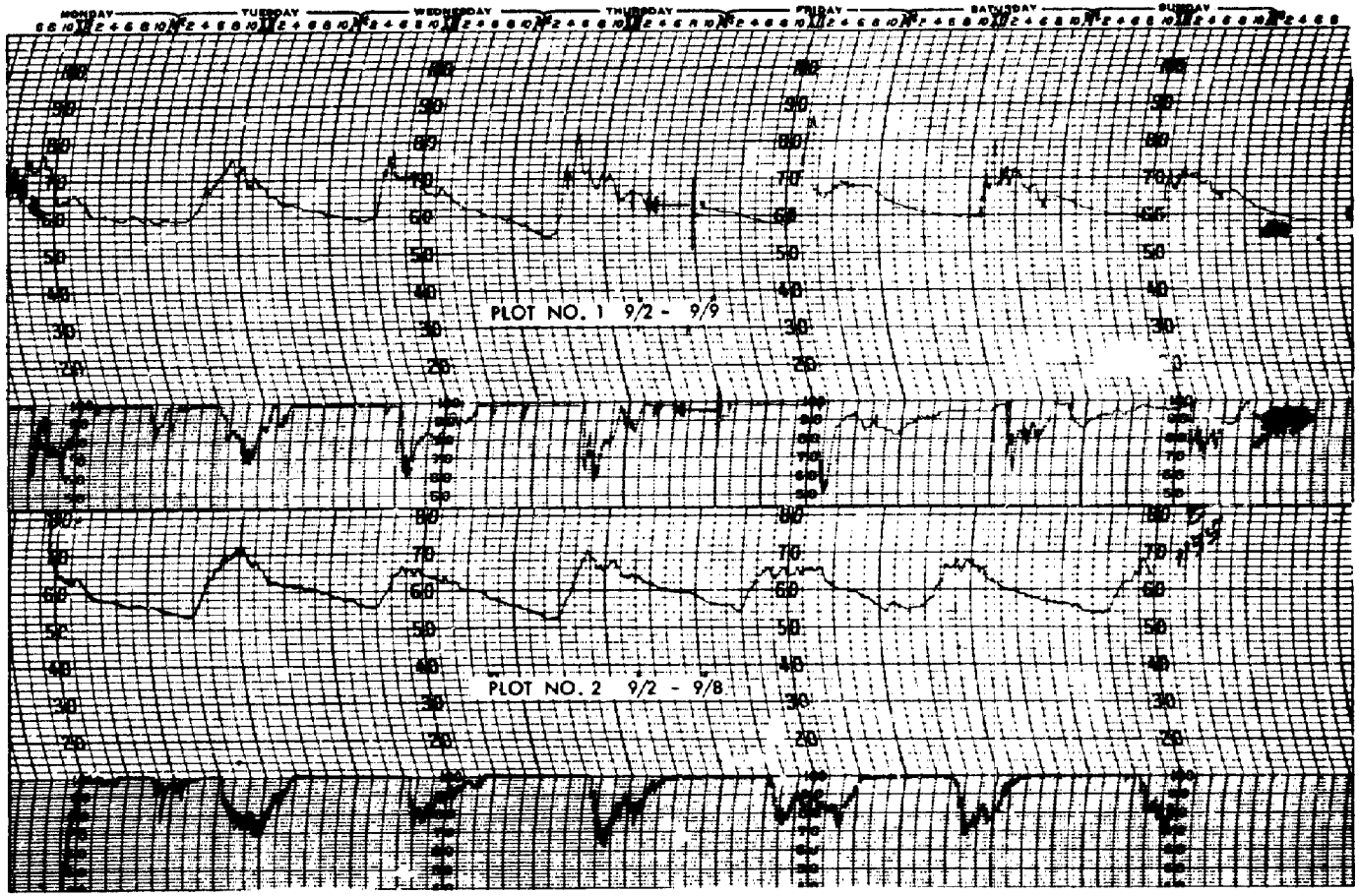


Figure B-6
HYGROTHERMOGRAPH CHARTS

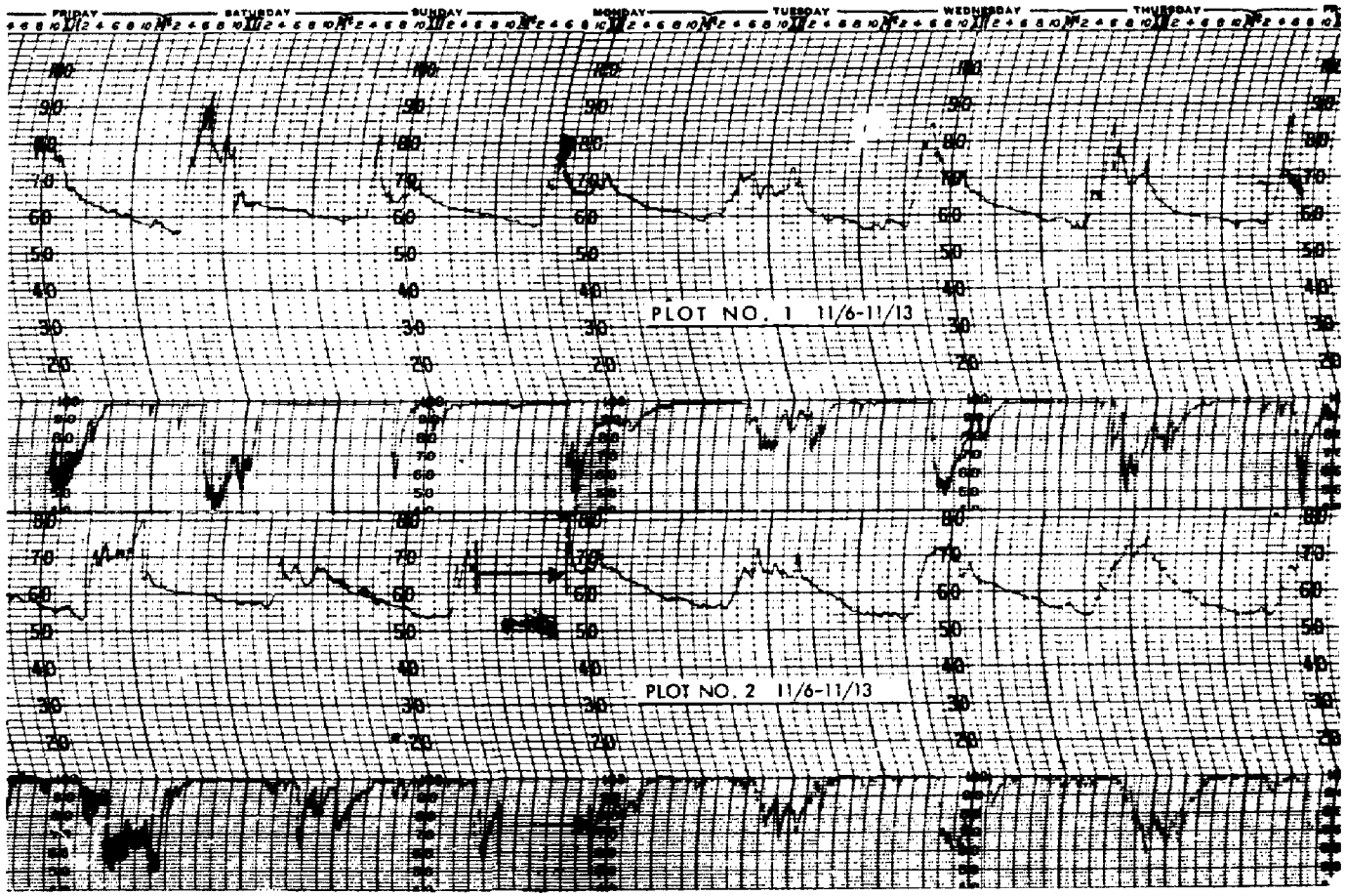


Figure B-6
HYGROTHERMOGRAPH CHARTS

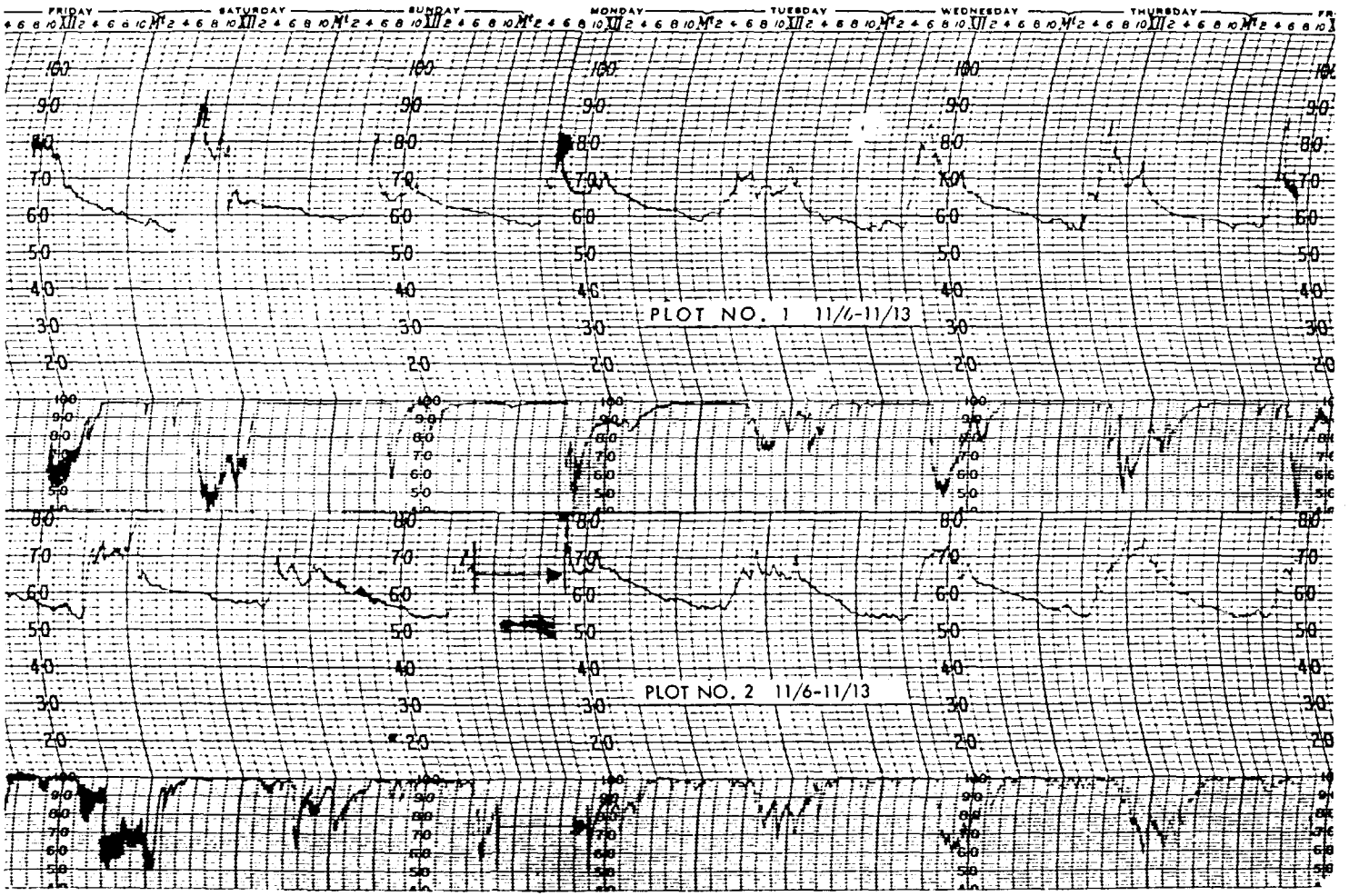


Figure B-7
HYGROTHERMOGRAPH CHARTS

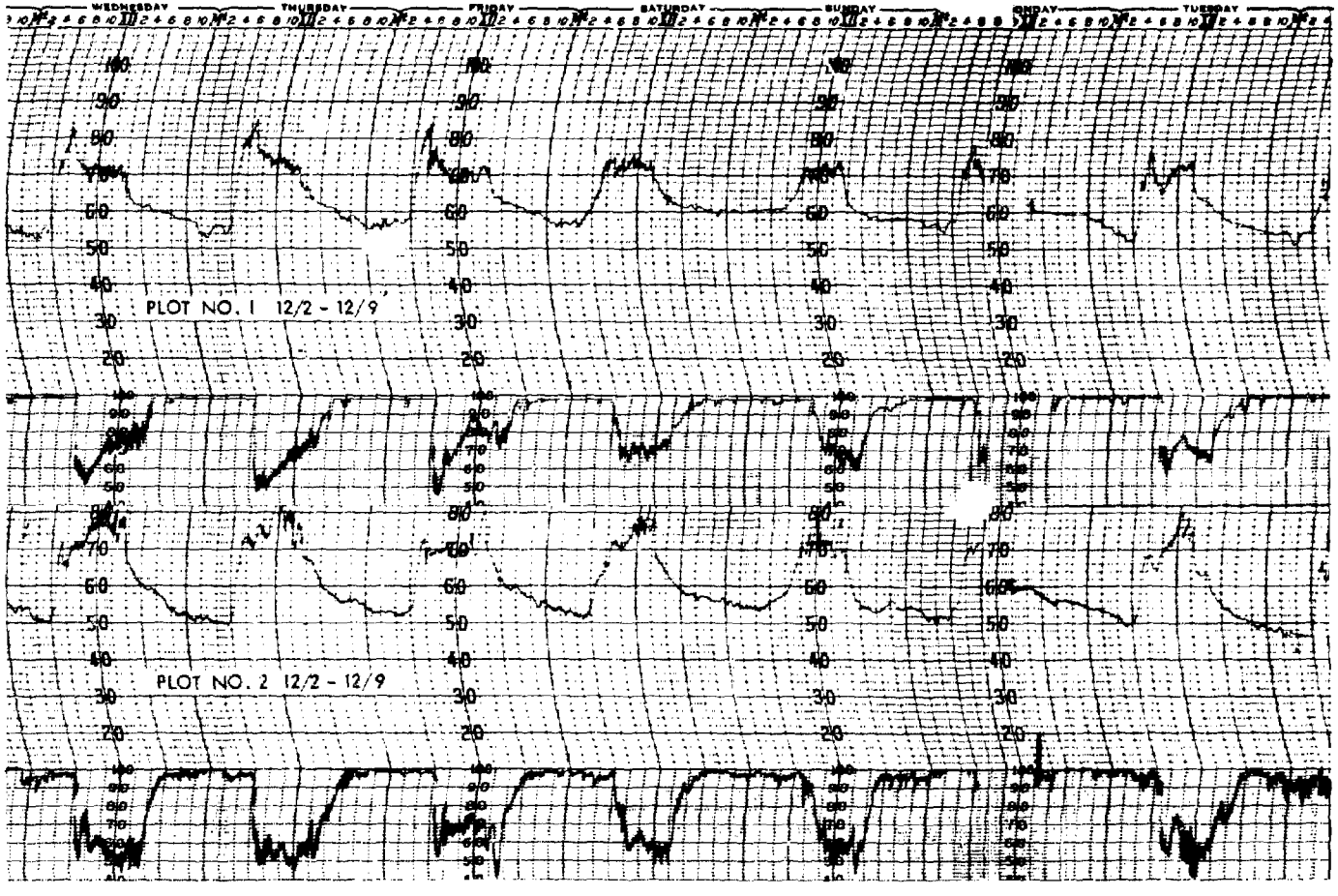


Figure B-8

HYGROTHERMOGRAPH CHARTS

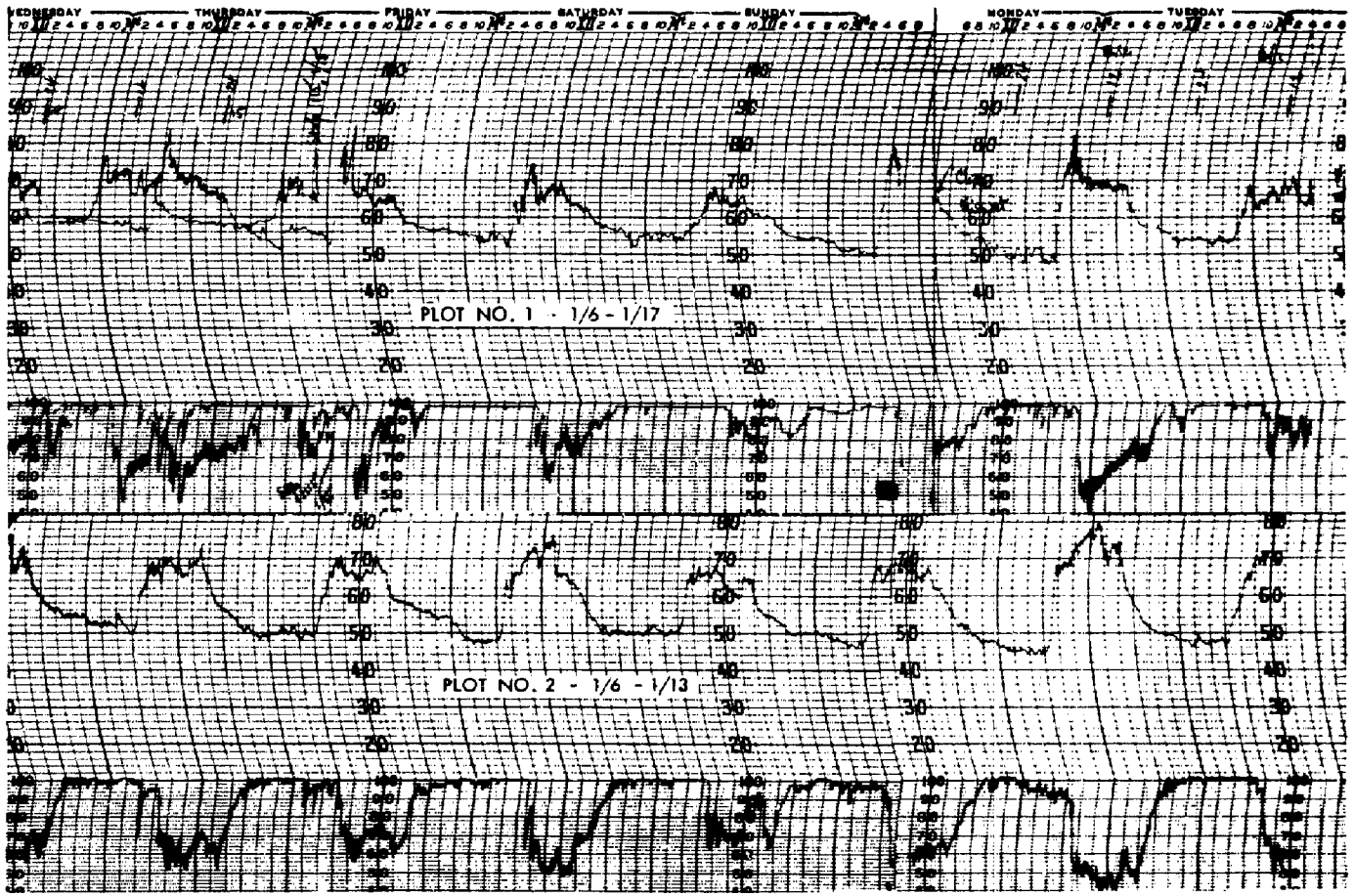


Figure B-9
HYGROTHERMOGRAPH CHARTS

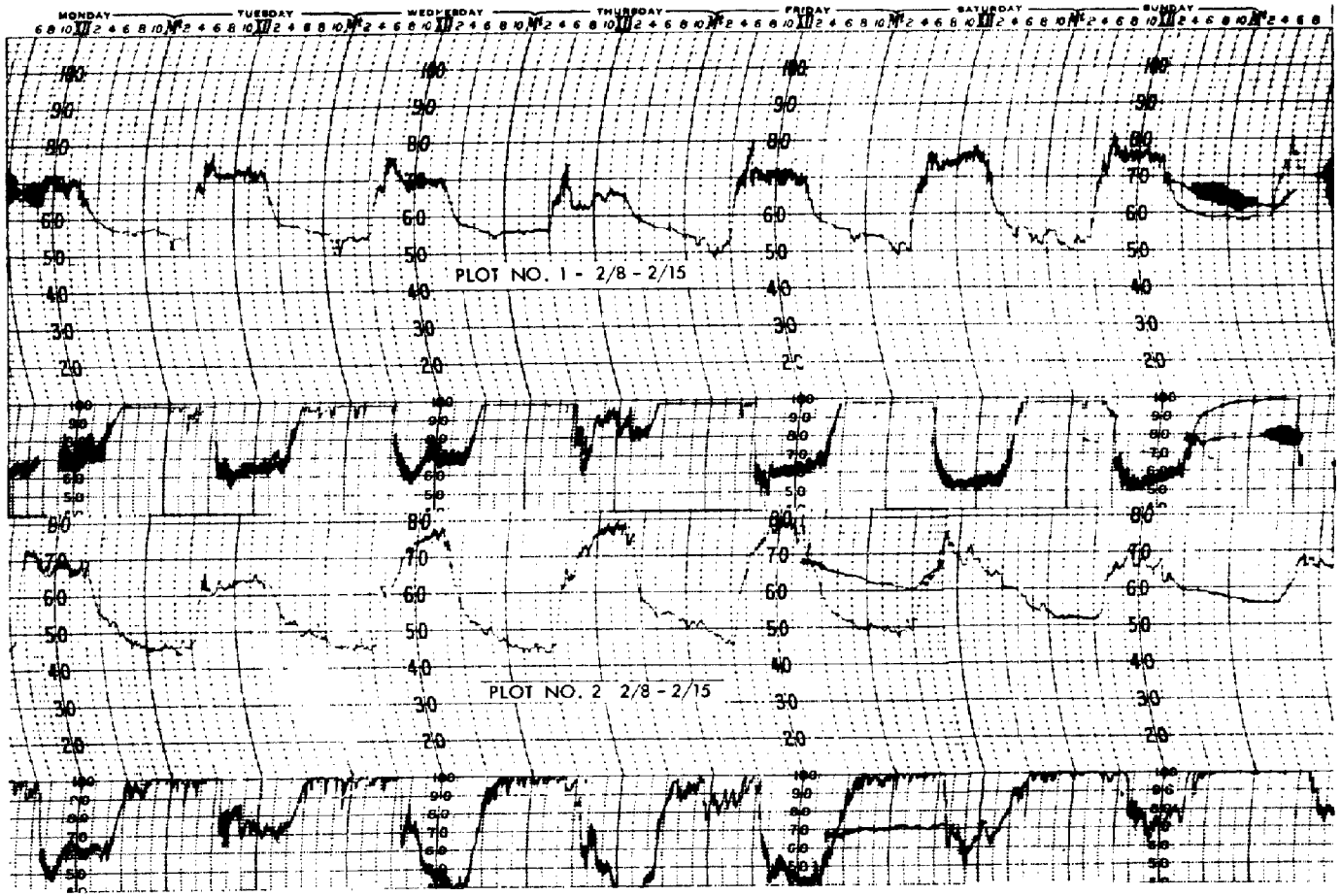


Table B-1

SUMMARY OF RAIN GAUGE MEASUREMENTS AT PLOT NO. 1

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
6/14	1500	-	-	0
6/15	0900	18.0	0.90	0.90
6/16	0725	22.4	0.07	0.97
	1630	9.1	~0	0.97
	1730	1.0	1.03	2.00
6/17	0825	14.9	0.11	2.11
	1600	7.6	~0	2.11
	1700	1.0	1.11	3.22
6/18	0645	13.8	0.02	3.24
	0945	3.0	~0	3.24
6/19	0820	22.6	0.08	3.32
7/13	0900	-	-	0
7/14	0715	22.2	2.85	2.85
	1600	8.75	0.00	2.85
7/15	0800	16.0	0.00	2.85
	1300	5.0	0.00	2.85
	1600	3.0	0.30	3.15
7/17	0600	38.0	1.59	4.74
7/18	0600	24.0	0.26	5.00
	1200	6.0	0.00	5.00
	1600	4.0	0.01	5.01
7/19	1400	22.0	0.14	5.15
7/20	1000	20.0	0.41	5.56
	1545	5.75	2.00	7.56
7/21	0730	15.75	0.08	7.64
8/10	1500	-	-	0
8/11	1030	19.5	0.00	0
	1430	4.0	0.00	0

Table B-1 (continued)

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
8/13	1230	50.0	0.18	0.18
	1330	1.0	0.25	0.43
8/14	0700	17.5	0.77	1.20
8/15	0630	23.5	0.43	1.63
8/16	1130	29.0	0.05	1.68
8/17	1100	23.5	0.34	2.02
9/2	0800	-	-	0
	1825	10.4	1.29	1.29
9/3	0600	11.6	0	1.29
	1300	7.0	0	1.29
	1340	0.67	0.07	1.36
9/4	0830	18.8	0.01	1.37
9/7	1040	74.2	1.40	2.77
9/9	0900	46.3	1.14	3.91
10/3	0900	-	-	0
	1735	8.58	0.59	0.59
10/4	1325	19.83	1.82	2.41
10/5	0550	16.42	0.03	2.44
	1725	11.58	0.49	2.93
10/6	0605	12.67	0.03	2.96
	1750	13.75	0.35	3.31
10/7	0545	11.92	0.01	3.32
	2230	16.75	0.21	3.53
10/8	0550	6.33	0.03	3.56
	1250	7.00	0.03	3.59
10/9	2020	31.50	0.16	3.75
10/10	0650	10.50	0.04	3.79
	1700	10.17	1.19	4.98

Table B-1 (continued)

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
10/11	0750	14.83	0.04	5.02
	1305	5.25	0.36	5.38
	2200	8.92	0.05	5.43
10/12	0730	9.50	0.02	5.45
	1425	6.92	0.62	6.07
10/13	0735	17.16	1.68	7.75
11/6[a]				-
11/7[a]				-
11/8[a]				-
11/9	1320	-	-	0
11/10	0600	16.7	0	0
	1650	10.8	trace	trace
11/11	0600	13.1	0.02	0.02
	1655	9.9	0	0.02
11/12	0600	13.0	0.02	0.04
	1335	7.6	0	0.04
11/13	0600	16.5	0	0.04
12/1	0730	-	-	0
12/2	0640	23.2	0.01	0.01
	1500	8.3	0	0.01
12/3	0640	15.7	0	0.01
	1700	10.3	0	0.01
12/4	0630	13.5	0	0.01
	1830	12.0	0	0.01

a Rain gauge not available

Table B-1 (concluded)

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
12/5	0630	12.0	0	0.01
	1700	10.5	0	0.01
12/6	1400	21.0	0.07[a]	0.08
	1730	3.5	0	0.08
12/7	0630	13.0	0.02[b]	0.10
	1630	10.0	0.77[c]	0.87
12/8	0730	15.0	0	0.87
12/9	0630	23.0	0	0.87
1/6	0800[d]	-	-	0
	1700	9.0	0.04[e]	0.04
1/7	1600	23.0	0.05[f]	0.09
1/8	0700	15.0	0	0.09
	1500	8.0	0.01[g]	0.10
1/9	1600	25.0	0	0.10
1/10	1800	26.0	0.04[h]	0.14
1/11	0700	13.0	0	0.14
1/12	0900	26.0	0	0.14
1/13	1400	29.0	0	0.14
1/15	1100	45.0	0.03[i]	0.17
	1600	5.0	0	0.17
1/16	0600	14.0	0	0.17
	1200	6.0	0	0.17
	2300	11.0	0.07[j]	0.24
1/17	1200	13.0	0	0.24

a Shower at 0615, 12/6
b Shower at 2155, 12/6
c Shower at 1245, 12/7
d 0.17 inch since 12/10/64
e Shower starting 1320, 1/6
f Shower starting 1730, 1/6
g Shower starting 1200, 1/8
h Shower starting 2330, 1/9
i Shower starting 0725, 1/15
j Shower starting 1710, 1/16

Table B-2

SUMMARY OF RAIN GAUGE MEASUREMENTS AT
PLOT NO. 2

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
6/14	1600	-	-	0
6/16	1545	47.8	0.96	0.96
	1630	0.75	0.34	1.30
6/17	0915	16.8	0.19	1.49
6/18	0500	19.8	0.03	1.52
	1430	9.5	0	1.52
	1710	2.7	0.12	1.64
	1740	0.50	0.03	1.67
6/19	0915	15.6	0.02	1.69
7/13	1030	-	-	0
	1700	6.5	1.04	1.04
7/14	1330	20.5	0.61	1.65
7/15	0800	19.5	0	1.65
	1000	2.0	0	1.65
	1410	4.2	0.07	1.72
	1510	1.0	0.18	1.90
7/16	1730	26.3	2.90	4.80
7/17	0500	11.5	0.18	4.98
7/19	1430	57.5	2.46	7.44
7/20	1500	24.5	0.25	7.69
7/21	0930	18.5	2.05	9.74

Table B-2 (continued)

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
8/10	0900	-	-	0
8/11	0800	23.0	0	0
8/12	0800	24.0	0.02	0.02
	1800	10.0	0	0.02
8/13	0900	15.0	0	0.02
	1530	6.5	0.77	0.79
8/16	1000	66.5	1.16	1.95
8/17	0800	22.0	0.21	2.16
9/2	1100	-	-	0
9/3	1515	28.2	0.72	0.72
	1800	2.75	0.60	1.32
9/4	0800	14.0	0.01	1.33
	1100	3.0	0.01	1.34
	1545	4.75	0.01	1.35
	1630	0.75	0	1.35
	1705	0.58	0.52	1.87
9/6	1520	46.2	0.66	2.53
9/7	0630	15.2	0.02	2.55
9/8	1115	28.8	0.64	3.19
10/3	1335	-	-	0
10/5	0745	42.67	0.79	0.79
10/7	1102	51.28	0.61	1.40
	2305	12.05	0.09	1.49
10/8	1425	15.33	0.05	1.54
10/9	2045	30.33	0.02	1.56

Table B-2 (continued)

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
10/10	0800	11.25	0.02	1.58
	1600	8.00	0.21	1.79
10/11	1405	22.08	2.22	4.01
	2225	8.33	0.10	4.11
10/12	0700	8.58	0.04	4.15
	1130	4.50	0	4.15
10/13	0700	19.50	2.96	7.11
11/6[a]				-
11/7	0950	-	-	0
11/8	0945	24.0	0.40	0.40
11/9	0845	23.0	0.11	0.51
11/10	0845	24.0	0	0.51
	1630	7.4	0.14	0.65
11/11	0620	13.8	0	0.65
	1625	10.1	0.58	1.23
11/12	0620	13.9	0.14	1.37
	1235	6.3	0	1.37
11/13	0640	18.1	0	1.37
12/1	1300	-	-	0
12/2	1040	21.7	0.01	0.01
12/4	0900	22.3	0	0.01
	1800	9.0	0	0.01
12/5	0800	14.0	0	0.01
	1300	5.0	0	0.01

a Rain gauge not available

Table B-2 (concluded)

Date	Time Observed	Δt (hrs)	Rainfall in Δt (inches)	Accumulated Rainfall (inches)
12/6	1500	26.0	0.16[a]	0.17
12/7	0730	16.5	0	0.17
	1500	7.5	0.48[b]	0.65
12/8	0630	15.5	0	0.65
	1230	6.0	0	0.65
12/9	0730	19.0	0	0.65
	1730	10.0	0	0.65
1/6	1400[c]	-	-	0
1/7	0800	18.0	0.02[d]	0.02
	1300	5.0	0	0.02
1/8	0800	19.0	0.01[e]	0.03
	1300	5.0	0	0.03
1/9	0700	18.0	0	0.03
1/10	1700	34.0	0	0.03
1/11	0800	15.0	0	0.03
	1100	3.0	0	0.03
1/12	0700	20.0	0	0.03
1/13	1100	28.0	0	0.03

a Shower at 1430, 12/5
b Shower at 1230, 12/7
c 0.36 inch since 12/10/64
d Shower starting 2045, 1/6
e Shower starting 0200, 1/8

Table B-3

AVERAGE HOURLY SURFACE WIND SPEEDS AT PLOT NO. 1
(miles per hour)

Hour	Date 6/15	6/16	6/17	6/18	6/19	6/20	7/13	7/14	7/15	7/16	7/17	7/18
1			Recorder Inoperative	4	3	2		5.0	0.4	1.5	1.0	0.8
2				3	5	2		3.0	0.3	3.0	1.5	2.0
3				2	4	1		2.0	0.8	2.0	1.5	4.5
4				2	5	3		2.0	1.0	2.5	2.0	1.5
5				4	3	3		1.5	3.0	2.5	2.5	3.0
6				4	4	5		2.0	1.9	1.5	1.5	2.5
7				4	4	7		1.5	0.5	1.5	2.5	3.0
8				4	5	4		2.5	0.6	0.5	3.0	4.0
9				2	6	4		4.0	3.5	3.5	5.0	6.5
10	6			1	8	4	5.0	6.0	5.0	3.5	4.5	7.0
11	7			7	10		5.0	6.5	6.0	5.0	4.0	6.0
12			10	11	8		3.5	4.5	6.0	5.0	4.0	6.0
13			11	10	8		2.5	5.0	5.5	4.0	5.0	7.0
14			11	10	7		2.5	5.0	5.0	4.0	4.0	7.0
15			10	10	4		1.0	3.0	4.0	6.0	2.5	5.5
16			8	9	8		2.0	1.1	2.0	2.5	1.5	5.0
17			9	2	8		4.0	1.3	1.2	2.0	4.0	3.0
18			7	2	6		4.0	3.0	1.0	2.0	3.0	1.5
19			5	6	1		2.0	3.0	1.5	1.5	3.5	2.0
20			4	4	1		2.0	0.6	0.3	1.5	2.5	0.8
21			3	4	1		1.0	0.3[a]	0.3	1.5	0.9	0.5
22			2	5	4		2.0	0.4	0.8	1.0	1.0	0.6
23			2	6	4		2.0	0.7	1.0	0.6	0.4	0.7
24	Recorder Inoperative	Recorder Inoperative	3	4	4		3.0	0.3	2.0	0.5	1.2	1.0

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero

Table B-3 (continued)

Hour	Date 7/19	7/20	7/21	8/10	8/11	8/12	8/13	8/14	8/15	8/16	10/3	10/4
1	2.0	1.5	0.6		2.5	1.0	0.3[a]	1.0	3.	3.0		0.3
2	2.0	2.0	0.5		3.0	1.0	0.3	0.8	2.5	0.6		0.3
3	1.5	2.0	0.6		3.5	1.5	0.3	2.5	3.5	1.0		0.3
4	1.5	2.5	1.0		1.5	1.5	0.3	2.0	2.0	2.0		0.3
5	2.0	2.5	1.5		2.0	1.0	0.3	2.0	2.5	1.5		0.3
6	3.0	2.0	1.5		1.0	1.0	0.3	2.0	4.5	1.5		0.3
7	3.5	1.0	1.0		0.5	3.0	0.3	0.7	2.0	4.0		0.8
8	3.0	2.0	1.0		1.0	2.5	0.7	0.9	2.0	4.0		3.4
9	1.5	4.0			4.0	6.0	2.5	3.5	8.0	3.0		0.5
10	2.5	2.5			6.5	7.5	4.0	6.0	7.0	6.0	0.6	0.4
11	4.5	1.5			7.5	8.5	4.0	8.5	6.0	5.5	0.5	2.5
12	4.5	4.0			7.5	7.5	8.0	9.0	7.0		0.4	3.6
13	4.0	3.0			7.5	7.0	6.0	4.0	6.5		3.8	0.4
14	3.5	3.5			7.0	7.5	3.5	1.0	6.0		4.9	0.3
15	3.0	3.0			7.0	7.0	2.0	1.0	6.0		0.4	0.3
16	2.5	1.5		8.3	5.5	4.0	3.0	2.5	7.0		0.3[a]	0.3
17	3.0	1.0		7.2	5.0	3.5	0.3	1.0	4.5		0.3	0.3
18	3.0	0.6		6.5	3.0	2.0	0.3	1.5	2.0		0.3	0.3
19	1.5	0.4		5.0	1.5	1.5	0.7	0.7	0.6		0.3	0.3
20	0.5	2.0		6.5	0.6	4.0	0.6	0.6	4.0		0.3	0.3
21	0.4	2.0		3.5	1.5	2.0	0.9	1.5	0.6		0.3	0.3
22	0.4	1.0		2.5	1.5	2.1	0.9	0.9	0.8		0.3	0.3
23	1.5	2.5		1.0	1.0	1.0	1.5	0.8	0.7		0.4	0.3
24	1.5	1.5		1.0	1.0	1.1	2.0	1.5	0.3		0.3	0.3

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero

Table B-3 (continued)

Hour	Date 10/5	10/6	11/9	11/10	11/13	12/1	12/2	12/3	12/4	12/5	12/6	12/7
1	0.3[a]	0.3	0.4	-[b]	-		2.0	0.9	2.3	2.2	5.2	0.5
2	0.3	0.7	2.0	-	-		1.8	1.7	2.4	-	4.8	1.5
3	0.3	0.4	1.4	-	5.4		1.9	2.4	1.3	-	4.9	1.1
4	0.3	0.4	1.4	-	3.4		2.4	3.9	1.2	-	8.2	3.4
5	0.3	0.3	1.9	2.9	1.3		3.5	3.2	1.8	-	9.6	4.8
6	0.3	0.3	2.0	1.6	1.6		3.0	3.4	1.2	-	8.2	4.3
7	0.3	1.2	1.85	1.1			4.4	3.4	1.0	-	6.6	0.9
8	0.3	0.6	4.0	3.4			6.2	6.0	3.9	7.0	10.9	2.0
9	0.4	4.4	7.0			5.4	8.3	6.9	6.9	12.0	10.6	6.9
10	0.6	5.9	6.5			5.9	9.5	8.4	9.4	-	12.6	8.0
11	0.7	4.9	6.4			6.8	11.0	10.2	10.4	-	13.4	6.4
12	2.9	5.2	5.9			6.9	10.4	10.6	11.4	-	15.1	6.3
13	4.2	7.5	5.4			7.8	10.8	11.0	-	-	12.4	5.3
14	0.8	7.8	5.5			8.4	11.4	11.6	-	-	13.2	6.0
15	0.5	2.4				6.6	9.4	11.6	-	-	12.4	3.3
16	0.3	1.1				5.1	8.0	8.2	-	-	9.6	6.9
17	0.3	0.3				2.1	6.5	7.5	5.4	8.0	9.9	6.9
18	0.3	0.5				4.6	3.6	4.6	3.4	4.4	5.9	6.5
19	0.5	0.4				6.9	2..	5.4	3.3	7.2	4.0	4.9
20	0.4	0.5				6.3	4.3	4.8	4.4	3.8	2.4	4.6
21	0.3	0.5				3.9	4.4	1.3	2.8	2.6	1.2	5.4
22	0.4	2.4				1.5	4.2	2.2	1.4	1.5	0	6.9
23	0.6	1.5				1.6	5.4	1.8	1.1	1.3	1.5	5.9
24	0.3	1.6				1.7	3.3	1.9	1.4	5.9	0.5	5.3

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero
b Dash indicates chart broke and stopped; no record

Table B-3 (continued)

Hour	Date 12/8	12/9	12/10	1/6	1/7	1/8	1/9	1/10	1/11	1/12	1/13	1/14
1	6.9	4.4	3.0		10.5	9.9	0.8	3.8	2.0	3.7	6.9	6.5
2	2.6	5.0	3.2		8.3	8.4	2.5	2.9	1.4	2.3	6.9	7.4
3	1.6	2.6	3.5		11.6	13.6	2.6	1.4	1.4	3.6	2.7	7.2
4	1.5	2.6	3.5		7.9	11.1	3.2	2.9	2.5	4.1	3.1	6.0
5	1.6	4.0	5.9		10.4	10.5	3.3	1.1	2.5	3.3	1.3	4.7
6	1.5	2.8	3.6		6.5	1.0	2.6	4.2	2.7	2.5	1.9	6.0
7	1.3	4.2			6.1	0.7	1.5	3.7	1.8	1.9	5.6	8.7
8	5.6	5.6			4.9	1.7	6.9	3.2	1.7	1.7	8.0	3.9
9	8.2	6.8		9.1	9.7	6.7	9.9	8.1	7.4	6.3	10.5	3.0
10	8.4	7.9		10.7	10.5	9.9	11.5	8.3	10.3	10.0	10.4	10.3
11	9.9	8.9		10.4	12.6	10.1	12.0	9.1	11.4	11.0	10.0	11.4
12	8.9	8.4		12.6	11.9	10.3	12.4	10.5	10.5	12.7	8.6	12.9
13	9.2	9.9		12.7	11.9	9.7	11.9	5.5	10.7	12.9	11.2	12.7
14	8.9	10.9		11.8	9.5	9.3	10.4	7.6	10.1	12.4	10.9	14.0
15	8.4	11.4		13.5	6.9	12.7	8.9	8.5	11.0	11.5	11.4	11.1
16	7.3	9.9		9.7	6.0	10.1	9.3	3.3	9.2	11.1	12.7	9.0
17	3.5	9.2		9.9	3.4	5.9	7.1	1.6	6.2	10.2	11.9	5.2
18	3.2	8.3		9.0	2.0	5.7	4.0	2.8	6.2	9.3	12.3	5.2
19	3.3	5.9		7.4	1.5	6.6	5.4	1.0	4.3	9.5	10.5	5.7
20	4.5	5.2		5.3	1.5	3.8	5.9	2.0	3.0	7.7	10.3	7.1
21	5.6	2.6		7.6	1.7	1.1	4.3	3.0	3.8	5.7	8.1	11.2
22	4.4	2.4		9.0	2.1	2.8	2.3	3.2	2.1	4.2	10.5	4.1
23	3.4	1.5		6.0	0.5	1.2	2.5	4.5	3.5	4.2	8.1	4.9
24	3.6	2.6		6.6	2.7	0.9	4.0	1.4	2.4	5.2	3.9	2.5

Table B-3 (concluded)

Hour	Date 1/15	1/16	1/17
1	3.4	0.8	8.1
2	2.0	3.7	7.0
3	3.3	2.4	6.5
4	3.9	1.5	4.1
5	7.0	1.7	2.2
6	3.7	1.3	3.2
7	3.2	4.3	2.0
8	3.8	6.2	2.9
9	10.6	11.2	6.7
10	12.3	9.9	8.4
11	12.0	11.1	9.4
12	9.1	9.7	
13	10.4	10.0	
14	11.4	8.5	
15	12.1	7.9	
16	10.1	8.6	
17	10.5	3.5	
18	10.6	5.7	
19	7.5	6.7	
20	1.1	4.1	
21	2.8	6.9	
22	4.8	7.4	
23	2.4	6.0	
24	4.4	6.9	

Table B-4

AVERAGE HOURLY SURFACE WIND SPEEDS AT PLOT NO. 2
(miles per hour)

Hour	Date 6/15	6/16	6/17	6/18	6/19	6/20	7/13	7/14	7/15	7/16	7/17	7/18
1		1.0	0.3	1.0	1.0	2.0		1.0	0.3[a]	0.9	1.5	0.3
2		0.8	0.3	0.3	1.0	1.0		1.0	0.3	0.8	1.5	0.6
3		0.8	0.5	0.5	1.0	0.5		2.0	0.6	1.0	2.0	1.0
4		0.9	0.7	0.8	1.0	1.0		1.5	2.0	1.5	2.0	0.7
5		1.0	1.0	0.8	2.0	2.0		1.5	1.5	1.5	2.0	2.0
6		1.0	1.0	0.9	0.9	1.0		1.0	1.5	1.0	3.0	1.5
7		0.3	0.3	0.5	0.3	2.0		2.0	0.7	0.7	2.5	1.0
8		0.4	2.0	0.6	2.0	2.0		1.5	1.0	0.7	1.0	1.5
9		0.9	2.0	1.0	3.0	2.0		1.5	2.0	1.0	1.5	1.5
10		2.0	3.0	0.9	5.0	2.0		2.5	2.5	2.0	1.0	3.0
11		4.0	6.0	2.0	8.0	5.0		1.5	3.5	2.5	1.0	4.0
12		5.0	5.0	3.0	6.0	3.0	3.0	4.0	6.0	4.0	5.0	5.5
13		7.0	9.0	5.0	3.0		3.0	2.5	6.0	4.0	7.0	4.0
14		6.0	5.0	4.0	1.0		0.7	2.0	5.0	2.0	6.0	8.5
15		2.0	2.0	3.0	3.0		0.7	3.0	4.0	5.0	4.0	5.0
16	3.0	0.9	2.0	2.0	4.0		3.5	2.5	2.0	4.5	1.5	5.0
17	1.0	0.8	3.0	4.0	1 0		3.5	1.0	1.5	2.5	1.0	3.5
18	1.0	0.5	0.4	2.0	1.0		2.5	1.0	1.0	2.5	1.5	1.5
19	0.3[a]	0.3	1.0	0.6	1.0		1.5	0.7	2.0	2.5	2.0	0.7
20	0.3	1.0	1.0	0.8	2.0		1.0	0.5	1.0	2.0	0.8	0.8
21	0.3	0.3	0.3	0.4	1.0		2.0	0.7	0.6	2.5	0.8	1.0
22	0.5	0.3	0.3	0.9	1.0		2.0	0.8	1.0	2.0	0.7	1.0
23	0.5	0.3	0.3	0.5	2.0		1.5	0.7	1.5	1.0	0.6	1.0
24	0.3	1.0	0.3	1.0	1.0		1.0	1.0	0.8	0.8	0.5	2.5

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero

Table B-4 (continued)

Hour	Date										
	7/19	7/20	7/21	8/10	8/11	8/12	8/13	8/14	8/15	8/16	8/17
1	2.5	2.0	0.6		0.3	0.3	0.3	0.3	0.3	0.3	0.3
2	1.5	2.0	0.8		0.3	0.3	0.3	0.3	0.3	0.3	0.3
3	1.0	2.0	0.7		0.4	0.3	0.3	0.3	0.3	0.3	0.3
4	1.0	2.5	1.0		1.0	0.3	0.3	0.3	0.3	0.3	0.3
5	1.0	2.0	2.0		0.7	0.3	0.3	0.3	0.3	0.3	0.3
6	1.5	1.0	1.0		0.3	0.3	0.3	0.3	0.3	0.3	0.3
7	1.0	0.8	1.5		0.6	0.3	0.3	0.3	0.3	0.3	0.3
8	0.6	1.0	2.0		0.3	0.3	0.5	0.3	0.3	0.6	0.3
9	2.0	2.5	2.0		0.3	2.0	0.5	0.3	1.0	1.0	
10	1.5	2.5	3.0	3.0	1.0	4.0	0.6	0.6	1.5	3.0	
11	3.0	2.0	3.0	4.0	2.5	6.0	1.0	0.3	1.0	3.0	
12	5.5	4.0		3.0	2.0	3.5	4.5	0.4	0.6	5.5	
13	5.5	4.5		4.5	4.0	4.0	2.0	0.3	1.0	5.0	
14	2.0	4.5		4.0	2.0	1.5	0.3	0.3	0.3	2.5	
15	1.0	3.0		2.5	3.0	2.0	0.3	0.7	2.0	0.3	
16	1.0	1.0		1.0	2.0	1.0	0.3	0.3	0.3	0.3	
17	0.7	0.8		1.0[a]	1.0	0.3	0.6	0.3	0.9	0.4	
18	2.0	2.0		0.3	0.3	0.3	0.3	0.3	0.6	0.3	
19	0.9	1.5		0.3	0.3	0.3	0.3	0.7	0.3	0.3	
20	0.9	1.5		0.3	0.3	0.3	0.3	0.6	0.3	0.3	
21	0.9	1.5		0.3	1.0	0.3	0.3	0.3	0.3	0.3	
22	0.5	3.0		0.3	1.0	0.3	0.3	0.3	0.3	0.3	
23	1.0	3.0		0.3	0.3	0.3	0.3	0.3	0.3	0.3	
24	1.5	0.6		0.3	0.3	0.3	0.3	0.3	0.3	0.3	

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero

Table B-4 (continued)

Hour	Date 9/2	9/3	9/4	9/5	9/6	9/7	9/8	11/9	11/10	11/13	12/1	12/2
1		0.3	0.3	0.3	0.3	0.4	0.3	-	0.6	0.8		0.3
2		0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.7	1.4		0.8
3		0.3	0.3	0.3	0.3	0.3	0.3	1.3	1.1	1.8		1.0
4		0.3	0.3	0.3	0.4	0.3	0.3	0.8	1.3	1.7		0.4
5		0.3	0.3	0.3	0.3	0.3	0.4	1.4	0.8	1.6		1.0
6		0.3	0.3	0.3	0.4	0.3	0.3	1.2	1.2	1.1		1.0
7		0.3	0.3	0.3	0.4	0.3	0.3	0.8	0.7	1.6		0.2
8		0.3	0.3	0.4	0.3	0.3	0.3	0.9	1.1			0.7
9		0.4	0.3	1.1	0.7	0.6	0.3	1.6	2.9			2.9
10		0.4	0.6	0.8	0.5	3.4	0.5	3.5	2.2			4.0
11	1.8	0.3	1.3	1.0	0.8	4.0	0.6	4.8				4.2
12	0.6	4.6	1.2	0.8	0.3	5.8		4.6				4.5
13	1.5[a]	3.2	0.4	2.3	0.4	3.2		4.2				2.8
14	0.3[a]	2.5	0.9	2.0	0.3	0.5		3.5				2.5
15	0.5	0.8	0.5	0.6	0.4	0.4		1.5			3.0	1.5
16	0.4	0.5	0.4	0.4	2.1	0.4		2.4			2.1	1.0
17	0.3	0.3	0.4	0.3	2.3	0.3		1.0			0.6	0.4
18	0.4	0.3	0.3	0.3	0.3	0.3		1.2			0.3	0.4
19	0.3	0.3	0.3	0.4	0.3	0.3		1.3			1.0	0.9
20	0.3	0.3	0.3	0.4	0.3	0.3		0.7			0.5	0.4
21	0.3	0.3	0.3	0.3	0.3	0.3		0.8			0.3	0.5
22	0.6	0.3	0.3	0.3	0.3	0.3		1.6			1.6	1.0
23	0.3	0.3	0.3	0.3	0.3	0.3		1.1			1.6	0.9
24	0.3	0.3	0.3	0.3	0.3	0.3		0.6			1.2	1.0

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero

Table B-4 (continued)

Hour	Date 12/3	12/4	12/5	12/6	12/7	12/8	12/9	12/10	1/6	1/7	1/8	1/9
1	0.8	0.5	0.8	0.6	0.6	0.3	1.0	1.2		0.7	0.8	0.3
2	0.5	0.3	1.0	1.0	0.2	0.3	1.0	1.5		1.0	1.0	0.6
3	0.8	0.7	1.1	0.8	0.4	0.5	1.0	1.5		1.2	1.1	0.8
4	1.8	1.0	1.1	1.0	0.7	1.0	1.0	1.1		1.5	0.4	0.8
5	4.0	1.0	1.0	1.0	1.5	1.2	1.0	1.5		1.3	1.7	0.6
6	3.0	0.7	1.0	0.8	1.3	1.1	2.0	1.0		1.1	1.1	0.9
7	2.5	0.5	0.6	1.5	1.1	0.8	1.3	1.8		0.9	0.9	0.5
8	3.5	1.2	1.2	2.4	1.2	1.5	1.3	1.2		0.4	1.0	1.1
9	3.2	2.1	4.4	1.7	1.8	2.5	2.5			3.5	2.0	1.8
10	3.5	2.5	4.0	2.5	2.6	2.9	3.5			3.9	1.6	2.9
11	6.0	3.6	4.1	3.5	2.4	3.5	3.8			2.7	2.1	5.0
12	3.6	3.6	4.5	4.4	2.0	3.0	4.5			2.5	1.6	4.5
13	1.1	4.6	4.0	3.6	4.2	3.8	4.8			1.7	3.5	4.6
14	1.0	4.5	3.9	3.0	3.5	3.8	6.5			3.3	5.1	4.4
15	1.0	3.4	2.6	3.5	1.5	2.9	3.9		3.1	2.7	4.1	3.0
16	0.3[a]	2.5	1.5	2.1	1.1	0.8	4.5		1.5	1.9	2.1	2.4
17	0.6	1.5	1.2	0.6	0.4	0.6	2.0		1.5	1.6	0.7	1.6
18	0.5	0.8	0.3	0.8	0.4	0.6	1.6		1.1	0.3	0.3	1.0
19	0.4	0.6	0.5	1.0	0.3	0.8	0.7		0.6	0.5	0.5	0.4
20	0.3	0.3	0.6	1.5	1.0	1.0	0.5		0.3	0.3	0.8	0.5
21	0.4	0.6	0.8	1.0	0.4	0.8	0.5		0.3	0.4	0.7	0.5
22	0.5	0.5	1.0	0.8	0.5	1.0	1.0		0.7	0.4	0.3	1.1
23	0.5	0.5	0.7	0.6	0.4	1.0	1.1		0.9	0.6	0.3	0.8
24	0.6	0.4	1.0	0.5	0.3				0.7	0.9	0.4	0.8

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero

Table B-4 (concluded)

Hour	Date 1/10	1/11	1/12	1/13
1	0.9	0.8	0.7	0.5
2	0.8	0.7	1.2	0.7
3	0.6	1.3	1.6	0.4
4	0.7	1.0	1.0	0.7
5	0.6	1.1	1.2	0.8
6	0.5	1.1	1.3	0.7
7	0.3[a]	0.6	0.8	0.6
8	0.3	1.1	0.9	1.5
9	1.0	1.6	2.5	5.8
10	2.6	3.4	2.7	3.9
11	2.2	2.9	3.6	3.4
12	1.5	3.4	4.0	
13	2.3	5.0	4.3	
14	1.6	4.5	3.5	
15	1.6	2.3	4.4	
16	2.2	1.9	2.8	
17	2.9	1.5	1.5	
18	2.4	0.6	0.8	
19	1.9	0.3	0.6	
20	0.5	0.3	0.4	
21	0.6	0.6	0.8	
22	0.9	0.7	0.6	
23	0.8	1.1	1.0	
24	0.7	0.9	0.7	

a 0.3 mi/hr is assumed for the speed when the anemometer record indicates zero

Table B-5

SUMMARY OF WIND SPEED MEASUREMENTS WITH HAND-HELD ANEMOMETER AT A HEIGHT OF 8 FEET ABOVE PLOT NO. 1

Day	End Time (hour)	Δt (min)	$\bar{v}_w$ (mi/hr)
9/3	0702	10	1.3
	1102	14	2.6
	1123	20	3.1
	1134	10	4.2
	1156	21	2.4
	1234	5	7.7
	1250	14	8.6
9/4	0850	10	4.8
	0917	20	6.6
9/7	0941	20	7.8
	0957	14	8.7
	1005	7	9.9
	1010	5	9.0
	1028	16	-9.0
	1038	7	8.3
	1107	28	9.6
	1130	19	9.6
	1139	6	10.4

Table B-6

SUMMARY OF WIND SPEED MEASUREMENTS WITH HAND-HELD ANEMOMETER AT A HEIGHT OF 8 FEET AT STATIONS 15 AND 16

Day	End Time (hour)	Δt (min)	$\bar{v}_w$ (mi/hr)
		Station 15	
1/14	1620	110	5.8
1/15	1737	8	3.9
1/16	0832	50	3.0
	0912	40	2.6
	1302	30	3.8
	1317	15	3.8
	1334	17	4.6
		Station 16	
2/16	0931	60	5.9
	0943	12	4.8
	1000	17	8.0
	1005	5	4.0
	1007	2	10.2
	1017	10	4.8
	1025	8	6.7
	1035	10	5.7
	1110	35	4.2
	1300	110	4.8
	1350	50	4.5
	1430	40	5.0

Appendix C

SUMMARY OF FOLIAR SAMPLING AND RELATED INFORMATION

Appendix C

SUMMARY OF FOLIAR SAMPLING AND RELATED INFORMATION

Information on the date and hour when each series of foliar samples was taken, together with the sample numbers, the type of sample, the associated background and tray samples, and the general meteorological conditions that prevailed during the contamination, is given in Table C-1 The letter designations in the table correspond to those given in Tables 21, 22, and 23 in the text.

Data on ages, weights, and planting densities of plants and plant parts are summarized in Tables C-2 and C-3 for vegetables and cereal grains, respectively. The ages are given in days after planting, and all weights are for the dried plant material. The value of m_p is in grams per plant or grams per unit plant part. As given in the text, the sample number without a suffix number indicates that the sample consisted of one or more complete plants. A sample number with -1 indicates leaves, -2 indicates fruits or grain heads, -2* indicates a flower, -3 indicates a stalk or stalks, and -4 indicates a corn tassel (-1,3 indicates leaves and stem). The data on the average planting densities for the cereal grains show that a marked decrease in the number of stalks (or plants) occurred during the second and third months, in spite of the fact that the plants were forming stools in the same period of time. Thus, it would appear that more than two-thirds of the initially sprouted plants were killed by the ceniza-arena deposits, and only the most vigorous plants ever grew to maturity.

The weights of tree leaves and twigs are summarized in Table C-4; in this table, the designation -1,3 following the sample number is for a group of leaves and the twig to which the leaves are attached. In some cases, the leaves were separated from the twig and were processed separately in the laboratory.

Data on the background measurements, designated as C^{o}_{PNR} values, and plant ages are summarized in Tables C-5, C-6, and C-7 for the vegetables, cereal grains, and tree leaves (or needles) and twigs, respectively.

The computed grain yields for the barley, oats, and wheat are summarized in Table C-8. The rye did not produce any ripened grain, although in the last sampling period, the heads were beginning to flower properly and to [illegible]e fruit.

Table C-1

DESCRIPTION OF TIMES AND CONDITIONS
UNDER WHICH THE FOLIAR SAMPLES WERE TAKEN

Date	Time of Sampling	Sample Numbers	Conditions and Comments
6/15	1000-1045	14002-14005, 14007-14010	B samples, spray-washed
	1145	14012-14019	P samples, dry, B from 14002-14010, tray 14007
6/16	0815	14020-14026	B samples, spray-washed
	0830	140[illegible]-14033	S samples, damp & dry, B from 14002-14005 and 14007-14010, trays 14007 and 14011
		14035-14038	O samples, unwashed
		14045-14048	
	0934	14039-14043	P samples, dry, B from 14020-14026, tray 14027
	1745	14049-14051	OR samples, 1.03 inches rain
		14052-14054	SR samples, 1.03 inches rain, B from 14020-14026, tray 14027 plus 0.18 gm/sq.ft.
6/17	0836	14055-14059	B samples, spray-washed
		14062-14066	
	1000	06005-06013	B samples, spray-washed
	1226	14067-14076	P samples, dry, B from 14055-14059 and 14062-14066, tray 14060
	1700	14079-14080	SR samples, 1.11 inches rain, B from 14055-14166, tray 14060 plus 6.25 gm/sq.ft.
6/18	0550	06014-06022	P samples, damp, B from 06005-06013, tray 06003
	0700	14081-14088	P samples, damp, Average B, tray 14077

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
6/18	0925	14091-14095, 14097, 14099, 14101, 14103.	P samples, dry, average B tray 14089
		14096, 14098, 14100, 14102, 14104	2P samples, damp, average B tray 14077 and 14089
	1430	06026, 06027 06029-06034	SW samples, B from 06005-06013, tray 06003 plus 17.76 gm/sq ft.
	1730	06034A-06043	SWR samples, B from 06005-06013, tray 06003 plus 25.34 gm/sq ft, 0.15 in.rain
7/13	1700-1800	06045-06048	B samples, rain-washed
7/14	0805-0845	14108-14117	B samples, spray-washed
	1315-1330	06049-06054	B samples, spray-washed
	1715-1745	14120-14127	P samples, dry, trays 14113 and 14118
7/15	0725-0735	14128-14137	P samples damp B from 14108-14117 (or average B), tray 14119
	0835-0900	06057-06066	P samples, damp, B from 06045-06054, tray 06055
	1035-1045	14139-14146	SW samples, damp and dry, B as for 14128-14137, trays 14119 and 14133
	1235-1245	14147-14156	SW samples, B as for 14128-14137, trays 14119, 14133, and 14138
	1420-1425	06067-06073	SWR samples, 0.07 inch rain, B as for 06057-06066, tray 06055 plus 0.61 gm/sq ft.

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
7/15	1505-1510	06074-06078	SWR samples, 0.25 inch total rain, some ceniza-arena in the rain, B as for 06057-06066, trays 06055 and 06056
	1605-1615	14158-14165	SWR samples, 0.30 inch rain, some ceniza-arena in the rain, B as for 14128-14137, trays 14119, 14133, 14138, and 14147
7/16	1715-1720	06080-06082	B samples, rain-washed
	1720-1740	06083-06087	B samples, spray-washed
7/17	0625-0645	14167-14174	B samples, spray-washed
7/18	0830	14177-14178	S samples, damp, average B, tray 14175
	0853	14179-14180	SW samples, average B (plot 1) tray 14175
	0915-0920	14181-14183	SW samples, average B (plot 1) tray 14175
	0950	14184-14185	SW samples, average B (plot 1) tray 14175
	1145	14186-14187	SW samples, average B (plot 1) tray 14175
	1545	14188-14189	SWR samples, average B (plot 1) 0.01 inch rain, tray 14175
7/19	1400	14190-14191	SWR samples, average B (plot 1) 0.15 inch rain, tray 14175 plus 0.58 gm/sq ft.
7/21	0800-0830	14194-14197	P samples, damp, average B, tray 14192 less 13.66 gm/sq ft
8/10	1015-1030	06093-06106	B samples, spray-washed
	1145-1200	06108-06113	P samples, dry, B from 06093-06106, tray 06092
	1640	14197	B sample, spray-washed
	1720-1725	14198-14203	P samples, mainly dry (few mud balls), average B, tray 14195

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
8/11	0700-0812	06114-06128	P samples, damp, B from 06093-06106, tray 06107
	1000-1022	14204-14215	S samples, overnight deposit, damp, some morning weathering, average B, tray 14196
	1010-1120	Set No. 1	Plate collector exposed, tray 14209
	1145-1220	14217-14226	B samples, spray-washed
	1240-1245	14227-14229	SW samples, average B, trays 14196 and 14209
	1310-1320	14231-14237	P samples, dry, B from 14217-14226, tray 14216
	1525-1535	14239-14241	P samples, dry, average B, tray 14230
	1535-1540	14242-14244	P samples, dry, B from 14217-14226, trays 14216 and 14230
8/12	0632-0645	06130-06134	P samples, damp (small deposit previous day, bulk of deposit arrived during the night), average B, tray 06129
	0648-0735	06136-06145	Same as for samples 06130-06134
	1300-1330	06147-06162	SW samples, damp and dry, average B, trays 06129 and 06135
	1740-1745	06164-06168	P samples (including a light weathered dry deposit during the early afternoon), mainly damp, average B, tray 06146 plus 0.16 gm/sq ft.
	1735-1740	06169-06171	S samples, damp, average B, trays 06129, 06135, and 06146; P samples, damp, B firm; P samples, 06147-06150, tray 06146
8/13	0740-0815	06172-06177(81)	2P samples, damp, average B, trays 06146 and 06163 plus 0.16 gm/sq ft.

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
8/13	0740-0815	06178, 79, 80, 82	2P samples, damp, backgrounds from 06147-06150, trays 06146 and 06163
	1320-1325	14242-14250	SWR samples, 0.43 inch rain, average backgrounds, tray 14238
	1515-1535	06184-06191	SWR samples, 0.77 inch rain, backgrounds from 06147-06162 trays 06146 and 06163 plus 2.75 gm/sq ft.
8/14	0700-0722	14252-14258	SWR samples, 0.77 inch rain since 1325, 8/13 (extra deposit most likely came with 0.41 inch rain shortly after previous set of samples was taken), average backgrounds, trays 14238 and 14251
	0725	14261	Same as for samples 14252-14258
	0740-0800	14259, 14260, and 14262	B samples, spray-washed
8/15	0657-0722	Set No. 2	Plate collector exposed, tray 14264
	0731-0801	Set No. 3	Plate collector exposed, no tray
	0925-0945	14266-14268	P samples, dry, average backgrounds trays 14264 and 14265
	1010	14270-14272	B samples, spray-washed
9/2	0720-0820	14272-14289	B samples, spray-washed
	1230-1250	06195-06202	OR samples
	1300-1320	06203-06209	B samples, spray-washed
9/3	0603-0644	14291-14307	P samples, damp, backgrounds from 14272-14289, tray 14271
	0820-0825	14308-14311	SW samples, backgrounds as for 14291-14307, trays 14271 and 14290
	1009-1013	14313-14316	SW samples, backgrounds as for 14291-14307, trays 14271 and 14290
	1140-1150	14317-14320	SW samples, backgrounds as for 14291-14307, trays 14271 and 14290

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
9/3	1244-1258	14321-14328	SW samples, backgrounds as for 14291-14307, 0.01 inch of rain (not enough to wet all the leaves), trays 14271, 14290, and 14312
	1325-1340	14329-14334	SWR samples, 0.07 inch of rain in <5 minutes, backgrounds as for 14291-14307, trays 14271, 14290, 14312, and 14324
	1845-1855	06210-06212	B samples, spray-washed
9/4	0615-0710	06213-06227	P samples, damp, backgrounds from 06203-06212, tray 06194
	0910	14336	P sample, dry, average backgrounds tray 14335
	1048-1058	06229-06238	SW samples, backgrounds as for 06213-06227, trays 06194 and 06228
	1600-1626	06240-06250	SWR samples, 0.02 inch rain, backgrounds as for 06213-06227, trays 06194 and 06228
	1700-1710	06251-06258	SWR samples, 0.54 inch rain, backgrounds as for 06213-06227, trays 06194 and 06228
9/6	1600-1605	06260-06264	B samples, spray-washed
9/7	0641-0730	06265-06279	P samples, damp, backgrounds from 06260-06264 (or average), tray 06259
	0924	14338	P samples, damp, average background 8.55 gm/sq ft
	0928	14343	P samples, damp, average background 8.55 gm/sq ft
	1000	14339	SW sample, average background, 8.70 gm/sq ft
	1003	14344	SW sample, average background, 8.70 gm/sq ft
	1032	14340	SW samples, average background, 9.10 gm/sq ft
	1036	14345	SW samples, average background, 9.10 gm/sq ft

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
9/7	1112	14341	SW samples, average background, 9.50 gm/sq ft
	1115-1127	14346-14351	P samples, dry, average background, tray 14352
	1132	14342	SW samples, average background, 9.50 gm/sq ft
10/3	1027-1040	14357-14360	OR samples
	1145-1150	14361-14364	OR samples
	1427-1436	06283-06287	OR samples
	1815-1845	14365-14374	B samples, spray-washed
10/4	1340-1350	14375-14382	B samples, spray-washed
	1430-1600	14383-14390	B samples, spray-washed
10/5	0945-1000	06288-06294	B samples, spray-washed
10/6	0613-0710	14391-14409	P samples, damp, backgrounds from 14365-14382 or average backgrounds, tray 14388
	0751-0821	14410-14420	SW samples, backgrounds as for 14391-14409, tray 14388 plus 0.1005 gm/sq ft
	0900	14421	B sample, spray-washed
	0930-0934	14422-14426	SW samples, backgrounds as for 14391-14409, tray 14388 plus 0.1333 gm/sq ft
	1126-1139	14427-14433	SW samples, backgrounds as for 14391-14409, trays 14388 plus 0.529 gm/sq ft
	1226-1236	14434-14442	SW samples, backgrounds as for 14391-14409, trays 14388 and 14390
	1237-1302	14444-14459	P samples, dry, average backgrounds tray 14390 minus 0.111 gm/sq ft
	1355-1400	14460-14463	SW samples, backgrounds as for 14391-14409, trays 14388 and 14390 plus 0.013 gm/sq ft
	1756-1817	14464-14472	SWR samples, 0.35 inch of rain, backgrounds as for 14391-14409 trays 14388, 14390, and 14443

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
10/8	1145-1245	14473-14479	B samples, spray-washed
	1145-1245	14480-14487	OR samples
	1430-1515	06296-06301	B samples, spray-washed
	1430-1515	06302-06309	OR samples
	1635-1645	06310-06312	Grain yield samples
10/11	0830-0900	14489-14491	Grain yield samples
	1305-1310	14492-14494	Grain yield samples
	1430-1445	06314-06316	Grain yield samples
11/6	1615-1620	14498-14500	OR samples
	1620-1630	14501-14508	B samples, spray-washed
11/7	0750-0800	14509-14510	OR samples
	0800	14511	O sample, old tree leaves
	0920-0930	06320-06325	B samples, spray-washed
	0935-0950	06326-06331	OR samples
11/9	0710-0720	14512-14524	P samples, damp, backgrounds from 14498-14510, tray 14497
	0900-0910	06332-06339	P samples, damp, backgrounds from 06320-06331, tray 06319
	1305-1318	14525-14535	SW samples, damp, backgrounds as for 14512-14524, trays 14497 and 14523
11/10	0715-0735	14536-14546	P samples, damp, backgrounds from 14498-14510 or 14525-14535, tray 14548
	0915-0930	06340-06345	B sample, spray-washed
	0930-0935	06346-06347	PW samples, damp, average backgrounds, tray 06319
	1040-1050	14549-14555	B samples, spray-washed
	1055-1100	14556-14559	OR samples
	1100-1105	14560	SW sample, damp, background as for 14546, tray 14548
11/13	0600-0610	14561-14570	P samples, damp, backgrounds from 14549-14560, tray 14547
	0645-0650	06348-06353	P samples, damp, background from 06340, 06345 or average background, tray 06335

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
12/1	0845-0900	14574-14577	O samples
	0900-1100	14578-14589	B samples, spray-washed
	1500	06357-06358	O samples
	1500-1600	06359-06366	B samples, spray-washed
	1600	06367-06370	O samples
	1605	06371	B sample, spray-washed
12/2	0800	14590	B sample, spray-washed
	0840-0900	14592-14603	P samples, dry (windy), backgrounds from 14574-14589, tray 14573
	1500-1510	14604-14607	PW samples, backgrounds as for 14592-14603, tray 14573
12/3	0800-0815	14608-14612	B samples, spray-washed
	1625-1650	14614-14623	S samples, damp and dry, backgrounds from 14604-14612, tray 14591
	1655	14624	S sample, damp and dry, background from 14576 and 14577, tray 14573 and 14591
12/4	0640-0705	14630-14640	P samples, damp, backgrounds from 14614-14624, tray 14613
	0710	14641	P sample, damp, backgrounds from 14624, tray 14613
	0740	14643-14644	B samples, spray-washed
	0930-1000	06372-06377	S samples, damp, backgrounds from 06359-06366, tray 06356
	1000	06378-06379	S samples, damp, backgrounds from 06357- 06358, tray 06356
	1045	06381-06383	S samples, damp, backgrounds from 06367-06370, tray 06356
12/5	0740	14646-14647	B samples, spray-washed
	0810-0830	06384-06394	P samples, damp, average backgrounds, tray 06380
	0835	06395-06397	P samples, damp, backgrounds from 06381-06383, tray 06380
	1220-1230	06399-06408	SW samples, damp, backgrounds as for 06384-06397, tray 06380 and 06398

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
12/6	1515-1545	06410-06413	B samples, spray-washed
	1545-1550	06414-06417	OR samples, 0.16 inch rain
12/7	0700-0705	14649-14651	B samples, spray-washed
	0735-0745	06419-06427	P samples, damp, backgrounds from 06410-06413, tray 06418
	0745-0750	06428-06430	P samples, damp, backgrounds from 06414-06417, tray 06418
	1500	06432-06436	OR samples, 0.48 inch rain, backgrounds from 06414-06417, tray 06418
12/8	0645-0700	06438-06446	P samples, damp, average backgrounds, tray 06431
	0705	06447-06450	P samples, damp, backgrounds from 06432-06436, tray 06431
	0745	14652-14653	OR sample, 0.77 inch rain
	1210-1220	06451-06458	SW samples, backgrounds as for 06438-06450, trays 06431 and 06437
	1220	06459	SW sample, backgrounds from 06435 trays 06431 and 06437
12/9	0645-0705	14655-14670	P samples, damp, average backgrounds from 14652-14653, tray 14648 minus 0.050 gm/sq ft
	0740-0755	06461-06468	S samples, damp, average backgrounds, tray 06460
	0800	06469-06471	S or SW samples, damp, backgrounds from 06451-06459 or as for 06461-06468, trays 06436, 06437, and 06460
12/12	1325-1330	13500-13501	B samples, spray-washed
12/13	0800-0815	13504-13508	P samples, damp conditions, trays 13502 and 13503

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
1/6	0830-1030	14658-14671, 14677	B samples, spray-washed (windy and dusty during sampling period)
	1030-1100	14672-14676 14678-14683	O samples, not spray-washed
	1430-1630	06476-06488	O samples, not spray-washed
	1700-1730	14684,14688	B samples, spray-washed
	1700-1730	14685-14687	OR samples, 0.04 inch rain
1/7	0800-0820	C6489-06491	B samples, spray-washed
	1020-1045	06492-06503	P samples, dry, background from 06489-06491 or average backgrounds, tray 06475
	1120-1150	06506-06516	2P samples, dry, backgrounds as for 06492-06503, trays 06475 and 06504; P samples, dry, backgrounds from 06492-06503, tray 06504
	1150	06517-06518	P samples, dry, backgrounds from 06481 and 06482, trays 06475 and 06504
	1315	06521	B sample, spray-washed
	1630-1650	14691-14707	P samples, dry, backgrounds from 14658-14688, tray 14689
1/8	0730-0815	06523-06539	P samples, mainly dry, but exposed to 0.01 inch rain, average backgrounds, tray 06520
	0815	06540-06541	S samples, dry, backgrounds from 06517-06518, trays 06519 and 06520
	1300-1320	06543-06560	SW samples, backgrounds as for 06523-06541, trays 06520 and 06522 (plus tray 06519 for samples 06557 and 06558)
	1330-1410	06561-06572	B samples, spray-washed
1/9	0720-0800	06579, 06580 06583, 06585, 06588-06590	P samples, damp, backgrounds from 06561-06571, tray 06542

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
1/9		06574-06578 06581, 06582 06584, 06585 06587, 06591- 06593	P samples, damp, backgrounds from 06543-06560, tray 06542; S samples damp, average backgrounds, trays 06520, 06522, and 06542
1/10	1645-1710	06595-06598	B samples, spray-washed
		06599-06603	O samples, not spray-washed
	1745-1810	14709-14721	S samples, damp, (from vegetables spray-washed 1700-1735 on 1/7) average backgrounds, tray 14690
1/11	0700-0710	14723-14727	P samples, damp, backgrounds from 14709-14721, tray 14708; S samples, backgrounds as for 14709-14721, trays 14690 and 14708
	0730-0800	06605-06614	P samples, damp, backgrounds from 06595-06603, tray 06594
	0830-1000	06615-06625	B samples, spray-washed
	1040-1050	06626-06628	PW samples, backgrounds from 06595-06603, tray 06594
	0900-1100	06629-06636	O samples, leaf and stem area measurements
1/12	0715-0800	06638-06651	S samples, semidamp, backgrounds from 06615-06625, tray 06604
	0900-0930	14729-14737	S samples, semidamp, backgrounds as for 14709-14721, trays 14690, 14708, and 14722
1/13	1500-1530	15002-15011	O samples, not spray-washed
	1615-1620	15012-15015	B samples, spray-washed
1/14	1400-1410	15017-15026	S samples, semidamp, backgrounds from 15012-15026, tray 15001
1/15	0705-0715	15027-15035	P samples, damp, backgrounds from 15017-15026, tray 15016

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
1/15	0835	15037	B sample, spray-washed leaves
	1550-1610	14739-14752	OR samples (some previously spray-washed), 0.03 inch rain, weathered since 0900 on 1/12
	1730-1735	15038-15049	P samples, dry, backgrounds from 15037, tray 15036
1/16	0540-0610	14753-14766	P samples, damp, backgrounds from 14739-14750, tray 14738
	0630-0645	15052-15061	P samples, damp(misty), backgrounds from 15038-15049, tray 15050; 2P samples, damp, backgrounds from 15037, trays 15036 and 15050
	0706	15062-15089	2P sample, single leaves, as above
	0730	15090	P and 2P samples, random leaves, as above
	1200-1210	14768-14781	SW samples, backgrounds as for 14753-14766, trays 14738 and 14751
	1210	14782	O sample, leaf and stem area measurements
	1705	15091	SW samples, random leaves, backgrounds as for 15063, trays 15050 and 15051
	1710	15092, 15093	Leaf volume-density samples
	2245-2300	14783-14795	SWR samples, 0.07 inch of rain, backgrounds as for 14753-14766, trays 14738, 14751, and 14767
2/8	1600	16001	O sample, not spray-washed
		16002-16004	B samples, spray-washed
	1710	15095	B sample, random leaves, spray-washed
2/9	0000-0010	14799-14812	O samples, not spray washed
	0730-0745	16006-16014	P samples, dry, tray 16000
	0830	16015-16016	B samples, spray-washed
	1445-1515	06655-06675	O samples, not spray-washed
	1720	15097	B sample, random leaves, spray-washed

Table C-1 (continued)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
2/10	1030-1100	06676-06692	B samples, spray-washed
	1100	06693	O sample, random leaves, not spray-washed
2/11	0915	16018-16019	B samples, spray-washed
	1130-1245	14813-14825, 14827-14830, 14838	B samples, spray-washed
		14826, 14831-14838	O samples, not spray-washed
2/12	0830-0950	14839-14840, 14842-14844	O samples, not spray-washed
		14840-1	B sample, spray-washed
2/13	1615	16020-16022	B samples, spray-washed
2/14	0900	16023-16026	B samples, spray-washed
2/15	0845	14845	O sample, not spray-washed
	1345	06694-06695	O samples, not spray-washed
2/16	0735-0835	16033-16037, 16046-16161	P samples, dry, backgrounds from 16020-16026, tray 16027
	0855-0905	15098-15106	S samples, dry, average backgrounds, tray 15069
	0935-0945	16038-16045	S samples, dry, backgrounds from 16018-16019, tray 16027
	1000-1025	16167-16229	PW samples, dry, backgrounds as for 16033-16161, tray 16027
	1315-1350	16230-16288	SW samples, dry, backgrounds as for 16033-16161, trays 16027 and 16028
	1350	16289-16292	S samples, dry, backgrounds as for 16033-16161, trays 16027 and 16028
	1425	16030-16032	B samples, spray-washed

Table C-1 (concluded)

Date	Time of Sampling	Sample Numbers	Conditions and Comments
2/18	0900-0925	06697-06705	O samples, not spray-washed
2/19	0830-0840	15108-15111	B samples, spray-washed
2/21	1650-1700	14846-14850	O samples, not spray-washed
2/22	0825	14851	O sample, not spray-washed
	1030	06706	O sample, not spray-washed
	1610	16293-16300	O samples, previously spray-washed

Table C-2

AGE, WEIGHT, AND SURFACE DENSITY OF VEGETABLE PLANTS AND PLANT PARTS
(Dry Weight Basis)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
		Bean-1					Bean-1 (continued)		
14004	29	1	0.750	2.25	14172	61	1	2.97	8.90
14013	29	2	0.645	1.94	14200-1,3	85	3	2.31	6.93
14021	30	1	1.04	3.12	14200-2	85	7	0.865	6.06
14030-1	30	4	0.0678	1.63	14200	85	3	4.33	12.99
14036	30	3	0.593	1.78	14212	86	2	1.69	5.08
14040-1	30	4	0.107	2.57	14224-1,3	86	5	0.897	2.69
14053	30	1	0.702	2.11	14224-2	86	9	0.850	4.59
14063	31	1	0.738	2.21	14224	86	5	2.43	7.28
14073-1	31	4	0.0856	2.05	06006	29	1	0.233	0.70
14079-1	31	4	0.109	2.62	06016	30	3	0.275	0.82
14080-1	31	4	0.0723	1.74	06027	30	3	0.338	1.01
14085-1	32	4	0.0838	2.01	06039-1	30	12	0.0517	0.93
14097-1	32	4	0.0833	2.00	06040-1	30	5	0.0697	1.25
14098-1	32	3	0.0774	1.86	06050	56	2	0.591	1.77
14109	58	2	1.91	5.72	06058	57	8	0.577	1.73
14121	58	3	1.48	4.44	06072	57	2	0.960	2.88
14130-1,3	59	2	0.982	2.95	06035	58	2	1.25	3.74
14130-2	59	7	0.472	4.96					
14130	59	2	2.63	7.90			Bean-2		
14140	59	2	2.07	6.22	14273	16	2	0.218	0.65
14153	59	1	2.98	8.94	14294	17	3	0.161	0.48
14163	59	2	2.01	6.04	14317	17	3	0.165	0.50

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
		Bean-2 (continued)					Bean-4		
14322	17	4	0.136	0.41	14658	86	1	2.88	8.63
14347	21	4	0.250	0.75	14659	86	1	1.79	5.37
14390	48	1	1.25	3.76	14691	87	2	1.61	4.84
14402	50	1	1.12	3.36	14709	90	2	1.76	5.26
14412	50	1	1.07	3.20	14723	91	2	3.72	11.1
14424	50	1	0.894	2.68	14729	92	2	3.08	9.23
14446	50	1	1.02	3.06	14740	95	1	8.14	24.4
14479	52	1	0.972	2.92	14753	96	2	5.55	16.7
06219	18	4	0.135	0.41	14768	96	2	3.84	11.5
06233	18	3	0.207	0.62	14799	120	2	14.2	42.7
06244	18	5	0.145	0.44	14813	122	2	8.24	24.7
					14833	122	2	16.4	49.4
		Bean-3			14837	122	1	12.3	36.9
06293	25	5	0.155	0.46			Bean-5		
06300	28	5	0.197	0.59	14584	20	3	0.220	0.66
06320	58	2	0.477	1.43	14592	21	4	0.192	0.58
06334	59	3	0.256	0.77	14604	21	4	0.239	0.72
06344	61	5	0.196	0.59	14608	22	4	0.247	0.74
06348	64	5	0.364	1.09	14615	22	3	0.224	0.67
06364	82	3	0.803	2.41	14632	24	4	0.290	0.87
06376	85	2	1.60	4.81	14667	29	4	0.327	0.98
06391	86	2	2.00	6.00	14710	60	4	1.01	3.04
06400	36	2	1.27	3.82	14724	61	2	1.23	3.70
06426	88	3	1.47	4.42	14730	62	4	1.12	3.37
06444	89	2	0.835	2.50	14741	65	2	1.35	4.05
06457	89	2	1.38	4.15	14754	66	3	1.04	3.13

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Bean-5 (continued)					Bean-6			
14769	66	3	0.935	2.80	06501	10	5	0.107	0.32
14784	66	1	0.672	2.02	06513	10	5	0.100	0.30
14800	90	2	3.90	11.7	06526	11	5	0.088	0.26
14814	92	2	4.60	13.8	06557	11	5	0.085	0.26
14839	93	3	6.45	19.4	06567	11	5	0.114	0.34
06366	20	3	0.192	0.58	06582	12	6	0.071	0.21
06375	24	4	0.173	0.52	06583	12	4	0.096	0.29
06392	25	5	0.172	0.52	06600	13	4	0.094	0.28
06399	25	5	0.176	0.53	06610	14	7	0.086	0.26
06410	26	4	0.224	0.67	06621	14	6	0.074	0.22
06425	27	4	0.216	0.65	06645	15	7	0.126	0.38
06443	28	4	0.211	0.63					
06456	28	4	0.240	0.72		Bean-7			
06467	29	4	0.359	1.08	06667	15	7	0.180	0.54
06487	56	2	0.391	1.17	06680	16	7	0.110	0.33
06499	57	4	0.503	1.51	06705	24	4	0.115	0.34
06512	57	4	0.380	1.14					
06528	58	4	0.580	1.14		Beet-1			
06552	58	4	0.501	1.50	14369	75	3	1.38	1.38
06568	58	3	0.538	1.61	14386	76	3	1.95	1.95
06584	59	3	0.420	1.26	14405	78	1	2.67	2.67
06585	59	1	0.628	1.88	14414	78	2	2.68	2.68
06622	61	3	0.650	1.95	14450	78	2	0.969	0.97
06646	62	4	0.433	1.30	14476	80	3	0.503	0.50

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Beet-1 (continued)					Beet-1 (continued)			
14501	109	2	0.933	0.93	06136	22	3	0.310	0.31
14515	111	1	2.04	2.04	06154	22	3	0.163	0.16
14528	111	1	5.81	5.81	06174	23	3	0.180	0.18
14539	113	1	1.90	1.90	06212	44	3	0.585	0.58
14551	113	1	2.07	2.07	06215	45	3	1.163	1.16
14563	116	1	8.02	8.02	06231	45	2	0.892	0.89
14582	134	1	4.70	4.70	06242	45	3	0.592	0.60
14596	135	1	4.04	4.04	06262	47	2	0.544	0.54
14606	135	1	7.83	7.83	06270	48	2	1.82	1.82
14610	136	1	5.10	5.10	06290	76	3	1.46	1.46
14618	136	1	2.60	2.60	06298	79	3	0.877	0.88
14636	137	1	4.97	4.97					
14663	142	1	3.23	3.23		Beet-2			
14669	170	1	3.24	3.24	14805	90	1	2.71	2.71
14696	171	1	3.55	3.55	14838	92	1	4.18	4.18
14715	174	1	5.67	5.67	06661	90	2	1.42	1.42
14733	176	1	12.4	12.4	06678	91	2	1.39	1.39
14752	180	1	4.92	4.92	06699	98	1	3.54	3.54
14758	180	1	6.56	6.56					
14772	180	1	9.45	9.45		Cabbage-1			
14788	180	1	3.92	3.92					
14848	214	1	8.75	8.75	14005	29	6	0.092	0.046
06096	20	5	0.295	0.30	14015	29	6	0.096	0.048
06111	20	3	0.229	0.23	14023	30	6	0.140	0.070
06117	21	3	0.183	0.18	14032	30	6	0.052	0.026

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Cabbage-1 (continued)					Cabbage-1 (continued)			
14043	30	6	0.047	0.024	14453-1	142	-	17.5	8.74
14065	31	4	0.088	0.044	14367-2	139	1	49.7	24.8
14075	31	3	0.081	0.040	14384-2	140	1	72.2	36.1
14088	32	6	0.091	0.046	14406-2	142	1	55.8	27.9
14112	58	3	0.838	0.42	14453	142	1	42.0	21.0
14123	58	3	0.921	0.46	14367-3	139	1	6.73	3.36
14129	59	3	0.737	0.37	14384-3	140	1	8.47	4.24
14141	59	2	0.797	0.40	14406-3	142	1	9.78	4.89
14154	59	2	1.13	0.57	14453-3	142	1	5.28	2.64
14164	59	2	0.652	0.33	14367	139	1	84.7	42.4
14173	61	2	1.15	0.58	14384	140	1	105.7	52.9
14202	85	1	12.9	6.44	14406	142	1	93.0	46.5
14215	86	1	19.9	9.94	14453	142	1	64.7	32.4
14226	86	1	15.1	7.57	06013	29	12	0.030	0.015
14233	86	1	6.64	3.32	06015	32	12	0.037	0.018
14240	86	1	12.3	6.15	06052	56	2	0.492	0.25
14260	89	1	13.3	6.63	06064	57	3	0.434	0.22
14268	90	1	13.2	6.61	06086	58	2	1.19	0.60
14274	108	1	27.3	13.6	06094	83	1	5.24	2.62
14295	109	1	50.6	25.3	06109	83	1	7.49	3.74
14329	109	1	54.8	27.4	06118	84	1	13.4	6.70
14348	113	1	88.2	44.1	06139	85	1	4.62	2.31
14349	113	1	47.4	23.7	06155	85	1	6.95	3.48
14367-1	139	-	28.3	14.2	06165	85	1	5.01	2.51
14384-1	140	-	25.0	12.5	06176	86	1	3.41	1.71
14406-1	142	-	27.4	13.7	06217	108	1	26.3	13.2

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Cabbage-1 (continued)					Cabbage-3 (continued)			
06246	108	1	21.9	11.0	06565	58	10	0.049	0.024
06289-1	139	-	19.4	9.70	06580	59	10	0.036	0.018
06289-2	139	1	17.8	8.92	06619	61	10	0.028	0.014
06289	139	1	37.2	18.6	06643	62	10	0.043	0.022
					06664	90	2	0.475	0.24
	Cabbage-2				06681	91	3	0.306	0.15
14662	86	1	2.29	1.15	06704	96	1	0.904	0.45
14663	86	1	2.38	1.19					
14707	87	2	1.86	0.93		Carrot-1			
14721	90	2	1.58	0.79					
14726	91	2	2.09	1.05	06097	83	10	0.191	0.38
14732	92	2	3.36	1.68	06112	83	5	0.113	0.23
14742	95	2	4.40	2.20	06115	84	5	0.157	0.31
14755	96	2	4.37	2.18	06138	85	5	0.086	0.17
14770	96	2	3.53	1.77	06152	85	5	0.072	0.14
14785	96	2	3.42	1.71	06167	85	5	0.265	0.53
14801	120	2	7.28	3.64	06173	86	3	0.137	0.27
14820	122	1	9.04	4.52	06211	107	3	0.402	0.80
14834	122	1	45.6	22.8	06214	108	3	0.601	1.20
14840	123	1	62.1	31.1	06230	108	2	0.597	1.19
					06241	108	3	0.262	0.52
	Cabbage-3				06263	110	3	0.434	0.87
06500	57	10	0.063	0.032	06269	111	2	0.875	1.75
06514	57	10	0.039	0.020	06294	139	3	0.767	1.53
06527	58	10	0.046	0.023	06297	142	1	1.58	3.16
06549	58	10	0.053	0.026	06322	172	1	1.68	3.37

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Carrot-1 (continued)					Carrot-2 (continued)			
06343	175	1	2.21	4.42	14819	206	2	1.78	3.56
					14841	207	1	13.8	27.7
	Carrot-2					Carrot-3			
06480	169	1	1.00	2.01					
06632	174	3	1.47	2.95	06442	113	4	0.368	0.74
06636	175	1	2.30	4.59	06454	113	5	0.264	0.53
14502	109	1	0.429	0.86	06465	114	5	0.184	0.37
14516	111	2	0.529	1.06	06496	142	3	0.766	1.53
14552	113	1	0.809	1.62	06510	142	3	0.701	1.40
14564	116	1	0.880	1.76	06530	143	3	0.512	1.02
14587	134	3	0.990	1.98	06550	143	3	0.415	0.83
14602	135	3	0.918	1.84	06564	143	3	0.837	1.67
14611	136	2	0.875	1.75	06578	144	3	0.312	0.62
14619	136	3	0.386	0.77	06579	144	2	0.471	0.94
14637	137	2	0.968	1.94	06598	145	3	0.490	0.98
14650	138	2	0.723	1.45	06608	146	3	0.918	1.84
14662	142	3	0.921	1.84	06618	146	3	0.399	0.80
14664	170	1	1.72	3.44	06642	147	3	0.768	1.54
14695	171	3	2.79	5.59	06660	175	3	0.940	1.88
14714	174	3	0.945	1.89	06683	176	3	0.350	0.70
14745	179	3	1.12	2.23	06701	183	2	0.966	1.93
14759	180	3	1.69	3.37					
14773	180	3	2.36	4.73		Carrot-4			
14795	180	1	1.71	3.43	06682	91	3	0.143	0.29
14804	204	1	8.92	17.8	06700	98	5	0.276	0.55

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Corn-1					Corn-1 (continued)			
14002	29	3	0.233	0.16	14262	89	1	7.55	5.03
14014	29	2	0.234	0.16	14278-1	108	7	0.767	3.58
14022	30	3	0.146	0.10	14278-2	108	1	5.20	3.47
14031	30	1	0.302	0.20	14278-3	108	1	7.28	4.85
14038	30	2	0.276	0.18	14278-4	108	1	0.674	0.45
14041	30	3	0.312	0.21	14278	108	1	18.5	12.4
14052	30	2	0.220	0.15	14300-1	109	-	-	3.59
14066	31	1	0.226	0.15	14300-2	109	1	6.30	4.21
14076	31	2	0.123	0.08	14300-3	109	1	12.5	8.31
14087	32	2	0.322	0.21	14300-4	109	1	0.628	0.42
14101	32	2	0.268	0.18	14300	109	1	24.8	16.5
14102	32	2	0.185	0.12	14323	109	1	6.19	4.13
14111	58	3	0.297	0.20	14330	109	1	15.0	9.97
14122	58	3	0.495	0.33	14361-1	139	6	1.31	5.23
14128	59	3	0.348	0.23	14361-2	139	1	14.0	9.36
14142	59	2	0.363	0.24	14361-3	139	1	19.1	12.7
14155	59	2	0.190	0.13	14361-4	139	1	1.11	0.74
14165	59	2	0.384	0.26	14361	139	1	42.1	28.1
14174	61	2	0.391	0.26	14371-1	139	5	0.541	1.81
14197	85	1	16.8	11.2	14371-2	139	1	10.9	7.25
14203	85	1	22.0	14.7	14371-3	139	1	5.45	3.63
14213	86	1	8.16	5.44	14371-4	139	1	0.469	0.31
14214	86	2	3.76	1.84	14371	139	1	19.5	13.0
14234	86	1	2.89	1.93	14456-1	142	5	0.215	0.71
14241	86	1	4.33	2.89	14456-2	142	1	7.15	4.76

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Corn-1 (continued)					Corn-1 (continued)			
14456-3	142	1	7.92	5.28	06267-4	111	1	1.52	1.01
14456-4	142	1	0.418	0.28	06267	111	1	40.2	26.8
14456	142	1	16.6	11.0					
06007	29	2	0.064	0.04		Corn-2			
06014	30	3	0.163	0.11					
06025	30	2	0.090	0.06	06301	28	5	0.104	0.07
06030	30	2	0.176	0.12	06332	59	3	0.619	0.41
06042	30	3	0.094	0.06	06349	64	5	0.493	0.33
06054	56	2	0.840	0.56	06361-1	82	7	1.54	7.18
06059	57	2	1.34	0.89	06361-3	82	1	6.94	4.63
06071	57	2	1.72	1.15	06361	82	1	17.7	11.8
06078	57	2	1.14	0.76	06387-1	86	7	2.10	9.80
06087	58	2	1.28	0.85	06387-3	86	1	14.7	9.80
06099	83	1	9.19	6.13	06387	86	1	29.4	19.6
06121	84	1	15.4	10.2	06483-1	118	-	-	12.0
06145	85	1	13.0	8.66	06483-3	118	1	15.3	10.2
06162	85	1	6.33	4.22	06483	118	1	33.3	22.2
06168	85	1	9.34	6.23	06489-1	119	10	2.05	13.6
06181	86	2	2.29	1.53	06489-3	119	1	56.0	37.4
06264-1	110	-	-	3.79	06489-4	119	1	9.44	6.29
06264-2,3	110	2,1	-	6.02	06489	119	1	85.8	57.2
06264-4	110	1	1.69	1.13	06492-1	119	12	2.66	21.3
06264	110	1	16.4	10.9	06492-3	119	1	90.4	60.3
06267-1	111	8	1.33	7.11	06492-4	119	1	17.5	11.7
06267-2,3	111	2,1	-	18.7	06492	119	1	139.9	93.3

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Corn-2 (continued)					Corn-2 (continued)			
06525-1,4	120	-	-	17.8	06688-3	153	1	76.6	51.1
06525-3	120	1	44.9	29.9	06688-4	153	1	5.67	3.78
06525	120	1	71.6	47.8	06688	153	1	146.2	97.5
06559-1	120	12	2.36	18.9	06694-1	158	12	2.66	21.2
06559-3	120	1	30.2	20.1	06694-2	158	1	35.9	23.9
06559	120	1	58.6	39.0	06694-3	158	1	68.8	45.9
06595-1	122	-	-	20.7	06694-4	158	1	4.36	2.90
06595-3	122	1	47.2	31.5	06694	158	1	140.9	93.9
06595	122	1	78.3	52.2					
06605-1,4	123	9,1	-	21.5		Corn-3			
06605-3	123	1	41.3	27.6					
06605	123	1	73.6	49.1	14506	32	5	0.0690	0.05
06626-1,4	123	10,1	-	18.5	14518	34	3	0.126	0.08
06626-3	123	1	41.3	27.6	14531	34	1	0.145	0.10
06626	123	1	69.6	46.4	14542	36	4	0.0982	0.07
06638-1,4	124	11,1	-	16.7	14554	36	4	0.137	0.09
06638-3	124	1	41.3	27.6	14566	39	5	0.198	0.13
06638	124	1	66.4	44.3	14588	57	3	0.377	0.25
06656-1	152	10	2.90	19.3	14600	58	2	0.784	0.52
06656-2	152	2	17.6	23.4	14621	59	1	0.677	0.45
06656-3	152	1	89.8	59.9	14656	65	1	3.34	2.23
06656-4	152	1	5.84	3.89	14739	102	1	13.3	8.88
06656	152	1	159.8	106.5	14762	103	1	13.6	9.03
06688-1	153	10	2.31	15.4	06324	33	5	0.0887	0.06
06688-2	153	2	20.4	27.2	06341	36	5	0.108	0.07

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Corn-3 (continued)					Corn-3 (continued)			
06362	57	3	0.716	0.48	06689-3	127	1	20.5	13.7
06373	60	2	1.65	1.10	06689	127	1	43.4	28.9
06388	61	2	1.86	1.24					
06406	61	3	0.881	0.59		Corn-4			
06420	63	1	3.10	2.07					
06439	64	2	1.19	0.79	14647	24	10	0.0544	0.04
06462	65	1	4.42	2.95	14657	28	10	0.0859	0.06
06490	94	1	13.5	8.99	14672	56	1	4.91	3.27
06493	94	1	23.3	15.5	14684	56	1	4.74	3.16
06506	94	1	14.5	9.64	14685	56	1	5.50	3.67
06524	95	1	25.8	17.2	14699	57	1	8.12	5.41
06545	95	1	11.6	7.71	14717	60	1	4.63	3.09
06546	95	1	4.85	3.23	14736	62	1	5.94	3.96
06561	95	1	9.59	6.39	14776	66	1	8.33	5.55
06575-1	96	7	0.901	4.21	14790	66	1	4.92	3.28
06575-3,4	96	1	1.15	0.77	14808		1	25.9	17.3
06575	96	1	7.46	4.97	14824		1	8.49	5.66
06576	96	1	5.19	3.46	14825-1		9	1.36	8.14
06615	98	1	18.7	12.5	14825-3		1	25.6	17.1
06639	99	1	25.3	16.8	14825-4		1	1.94	1.29
06655-1	127	-	-	20.0	14825		1	39.8	26.5
06661-3	127	1	32.7	21.8	14845-1		11	1.20	8.82
06661	127	1	62.7	41.8	14845-3		1	16.8	11.2
06689-1	127	-	-	15.2	14845-4		1	2.37	1.58
					14845		1	32.4	21.6

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Lettuce-1					Lettuce-2 (continued)			
06098	83	5	0.159	0.32	14529	111	1	1.60	3.20
06113	83	3	0.421	0.84	14540	113	1	1.71	3.42
06114	84	5	0.152	0.30	14553	113	1	0.763	1.53
06134	85	5	0.200	0.40	14565	116	1	2.49	4.98
06151	85	5	0.170	0.34	14585	134	1	3.94	3.94
06166	85	5	0.158	0.32	14590	135	1	14.4	14.4
06172	86	5	0.158	0.32	14597	135	1	4.38	4.38
06210	107	3	0.337	0.67	14620	136	1	1.14	1.14
06213	108	3	0.297	0.59	14631	137	1	5.31	5.31
06229	108	2	0.327	0.65	14660	142	1	8.92	8.92
06240	108	3	0.221	0.44	14661	142	1	3.59	3.59
06260	110	2	0.250	0.50	14671	170	1	8.97	5.38
06268	111	3	0.345	0.69	14697	171	1	15.7	9.43
06292	139	3	0.899	1.80	14716	174	1	12.3	7.37
					14735	176	1	14.7	8.80
	Lettuce-2				14746	179	1	7.67	4.60
					14760	180	1	23.0	13.8
14387	76	5	0.152	0.30	14774	180	1	5.10	3.06
14404	78	3	0.196	0.39	14789	180	1	8.57	5.14
14416	78	5	0.271	0.54	06296	79	5	0.260	0.52
14452	78	5	0.296	0.59	06323	110	2	0.676	1.35
14473	80	3	0.146	0.29	06342	113	1	0.655	1.31
14508	109	2	0.578	1.16					
14517	111	2	0.800	1.60					

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Lettuce-3					Onion-1 (continued)			
06659	90	3	0.506	1.01	14634	201	2	2.01	4.02
06677	91	1	0.627	1.25	14649	204	2	1.52	3.04
06698	98	1	3.33	6.66	14664	206	2	2.18	4.36
					14667	234	1	1.88	3.76
	Onion-1				14668	234	1	1.67	3.34
					14694	235	1	4.84	9.68
14279	108	5	0.142	0.85	14713	238	1	3.30	6.60
14296	109	5	0.144	0.86	14727	239	1	4.57	9.14
14368	139	3	0.766	4.60	14734	240	2	1.60	3.20
14385	140	5	0.432	2.59	14744	243	1	7.19	14.4
14403	142	5	0.482	2.89	14757	244	1	6.34	12.7
14415	142	5	0.363	2.18	14781	244	2	3.06	6.12
14433	142	5	0.121	0.73	14786	244	1	3.03	6.06
14449	142	5	0.459	2.75	14803	268	2	5.44	10.9
14477	144	5	0.325	1.95	14818	270	2	2.61	5.22
14503	173	3	0.349	0.70	14836	270	1	21.2	42.4
14514	175	2	0.678	1.36	14842	271	3	3.21	6.42
14527	175	2	0.802	1.60	14850	278	1	4.72	9.44
14538	177	1	1.96	3.92	06053	56	20	0.0140	0.17
14550	177	2	0.452	0.90	06061	57	20	0.0158	0.19
14562	180	2	1.75	3.50	06095	83	15	0.0297	0.36
14581	198	3	0.833	1.67	06110	83	10	0.0279	0.33
14595	199	2	1.91	3.82	06116	84	10	0.0485	0.58
14617	200	1	1.61	3.22	06137	85	10	0.0316	0.38

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Onion-1 (continued)					Pea-1 (continued)			
06153	85	10	0.0264	0.32	14586	52	3	1.17	1.76
06175	86	10	0.0[illegible]	[illegible]	14599	53	3	0.819	1.23
06216	108	5	0.180	[illegible]	14622	54	3	0.760	1.14
06232	108	3	0.[illegible]	[illegible]	14630	55	3	1.05	1.58
06243	108	3	0.[illegible]	[illegible]	[illegible]355	60	3	1.68	2.52
06261	110	5	[illegible]	[illegible]	[illegible]4670-2	88	5	0.686	7.72
06271	111	3	0.[illegible]	[illegible]	[illegible]678	88	3	10.5	15.8
06291	[illegible]	3	0.[illegible]	[illegible]	[illegible]-2	89	10	0.570	6.41
06299	[illegible]	5	0.113	0.[illegible]	[illegible]	28	5	0.131	0.20
06[illegible]	[illegible]72	2	0.474	2.84	[illegible]	29	5	0.142	0.21
					[illegible]	31	5	0.208	0.31
	Onion-2				[illegible]	34	5	0.144	0.22
					[illegible]	52	3	0.810	1.22
[illegible]633	90	10	0.0678	0.81	06[illegible]	55	3	0.712	1.07
[illegible]634	91	10	0.0476	0.57	06[illegible]	56	3	1.83	2.74
06702	98	64	0.0704	0.84	0640	56	3	1.54	2.31
					06419	58	3	1.86	2.79
	Pea-1				06438	59	3	1.46	2.19
					06451	[illegible]	3	1.49	2.24
14507	27	5	0.182	0.27	06461	[illegible]	3	1.44	2.16
14519	29	5	0.197	0.30	06533-2	[illegible]	10	0.516	5.80
14530	29	5	0.147	0.24	06544-2	[illegible]	10	0.483	5.43
14541	31	5	0.192	0.29	06569-2	[illegible]	10	0.314	3.53
14555	31	5	0.195	0.29	06586-2	91	10	0.439	4.94
14567	34	5	0.292	0.44	06587-2	[illegible]	10	0.450	5.06

Table C-2 (continue

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Pea-1 (continued)					Pea-2 (continued)			
06614-2	93	10	0.486	5.47	06384	24	5	0.237	0.36
06634-1	93	59	0.0269	2.38	06404	24	5	0.295	0.44
06634-2	93	4	0.433	2.60	06412	25	5	0.272	0.41
06634-3	93	-	1.93	2.89	06421	26	5	0.271	0.41
06634	93	1	5.25	7.87	06440	27	5	0.249	0.37
					06452	27	5	0.202	0.30
	Pea-2				06463	28	5	0.295	0.44
					06485	56	3	4.64	6.96
14646	24	5	0.184	0.28	06491	57	1	6.00	9.00
14658	28	5	0.283	0.42	06494	57	2	4.35	6.52
14679	56	3	4.86	7.29	06507	57	1	6.15	9.22
14688	56	2	4.24	6.36	06523	58	3	3.99	5.98
14700	57	2	4.37	6.56	06543	58	1	6.70	10.0
14763	66	2	7.54	11.3	06562	58	2	4.41	6.62
14777	66	2	5.02	7.53	06574	59	3	5.92	8.88
14791	66	2	5.49	8.24	06596	60	2	3.96	5.94
14807	90	2	6.50	9.75	06606	61	2	4.78	7.17
14822-2	92	5	1.33	14.9	06616	61	1	5.37	8.06
14823	92	3	9.62	14.4	06628	61	2	5.04	7.56
14844-1	93	50	0.0862	6.47	06635-1	61	46	0.0445	3.07
14844-2	93	8	1.018	12.2	06635-2	61	2	0.124	0.37
14844-3	93	-	7.31	10.9	06635-3	61	-	1.78	2.68
14844	93	1	19.8	29.6	06635	61	1	4.07	6.11

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Pea-2 (continued)					Pepper-1 (continued)			
06640	62	2	6.35	9.52	14725	175	2	1.26	1.89
06657	90	1	21.9	32.9	14731	176	2	0.880	1.32
06679	91	2	7.84	11.8	14743	179	2	1.17	1.75
					14756	180	3	0.891	1.34
	Pepper-1				14771	180	3	1.10	1.65
					14787	180	1	1.73	2.60
14421	78	10	0.0546	0.08	14802	204	3	1.51	2.26
14448	78	10	0.0515	0.08	14816	206	1	3.54	5.31
14474	80	10	0.0268	0.04	14817-2	206	2	1.98	2.97
14505	109	5	0.0917	0.14	14847-1	214	29	0.0843	3.67
14513	111	5	0.136	0.20	14847-2	214	1	5.66	8.49
14526	111	5	0.131	0.20	14847-3	214	1	1.11	1.67
14537	113	5	0.140	0.21	14847	214	1	9.22	13.8
14580	134	5	0.336	0.50	06389	137	2	1.352	2.03
14594	135	2	0.275	0.41	06402	137	3	0.805	1.21
14612	136	4	0.274	0.41	06423	139	4	0.348	0.52
14616	136	3	0.166	0.25	06497	170	2	0.438	0.66
14635	137	4	0.212	0.32	06662	203	1	1.19	1.78
14651	140	4	0.321	0.48	06685	204	1	0.974	1.46
14665	142	4	0.601	0.90	06703	211	1	1.56	2.34
14665A	170	1	1.05	1.58					
14666A	170	1	0.963	1.44		Potato-1			
14693	171	3	0.657	0.99	14598	53	1	0.876	0.44
14712	174	3	0.771	1.16	14659	60	1	1.13	0.56

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Potato-1 (continued)					Potato-1 (continued)			
14677	88	1	2.64	1.32	06547	90	1	2.83	1.42
14698	89	1	2.33	1.16	06548	90	1	2.79	1.40
14747	97	1	3.52	1.76	06563	90	1	4.08	2.04
14761	98	1	2.26	1.13	06577	91	1	7.66	3.83
14775	98	1	1.67	0.84	06597	92	1	2.97	1.48
14906	122	1	1.66	0.83	06607	93	1	3.55	1.78
14821	124	2	0.998	0.50	06617	93	1	5.91	2.96
14843	125	1	3.41	1.70	06627	93	1	2.58	1.29
06363	52	1	1.82	0.91	06641	94	1	5.82	2.91
06374	55	1	3.81	1.90	06658	122	1	2.64	1.32
06385	56	1	4.16	2.08	06676	123	1	3.63	1.82
06403	56	1	1.60	0.80	06697	130	1	2.79	1.40
06413	57	1	1.33	0.66					
06422	58	1	1.33	0.66		Radish-1			
06441	59	1	1.46	0.73					
06453	59	1	1.48	0.74	14583	52	3	0.284	1.14
06464	60	1	1.75	0.88	14593	53	3	0.284	1.14
06486	88	1	4.75	2.38	14605	53	3	0.331	1.32
06495	89	1	5.21	2.60	14609	54	4	0.276	1.10
06508	89	1	3.34	1.67	14614	54	3	0.283	1.13
06509	89	1	4.43	2.22	14633	55	4	0.363	1.45
06521	89	1	7.92	3.96	14666	60	4	0.725	2.90
06531	90	1	2.63	1.32	14660A	88	1	1.46	5.84
06532	90	1	4.98	2.49	14661A	88	1	1.61	6.44

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Radish-1 (continued)					Squash-1			
14692	89	3	1.05	4.20	14003	29	1	1.04	0.78
14711	92	2	2.13	8.52	14012	29	1	1.26	0.95
06365	52	3	0.299	1.20	14020	30	1	0.758	0.57
06377	55	3	0.552	2.21	14029-1	30	2	0.200	0.75
06390	56	4	0.453	1.81	14035-1	30	4	0.190	0.71
06401	56	5	0.281	1.12	14039-1	30	3	0.229	0.86
06411	57	4	0.382	1.53	14054-1	30	3	0.131	0.49
06424	58	4	0.351	1.40	14062-1	31	3	0.263	0.99
06445	59	4	0.242	0.97	14072-1	31	4	0.212	0.80
06455	59	4	0.408	1.63	14083-1	32	2	0.107	0.40
06466	60	4	0.583	2.33	14084-1	32	2	0.139	0.52
06484	88	3	0.861	3.44	14095-1	32	3	0.206	0.77
06498	89	3	1.51	6.04	14096-1	32	4	0.188	0.70
06511	89	3	1.59	6.36	14108	58	1	1.53	1.15
06529	90	3	1.40	5.60	14120	58	2	1.54	1.15
06560	90	3	0.514	2.06	14134	59	2	0.766	0.57
06566	90	3	0.711	2.84	14139	59	1	1.20	0.90
06581	91	3	0.600	2.40	14152	59	1	1.50	1.12
06599	92	3	0.971	3.88	14156-2*	59	1	0.0951	0.14
06609	93	3	1.50	6.00	14162	59	1	1.56	1.17
06620	93	3	0.836	3.34	14171	61	1	0.817	0.61
06644	94	3	1.64	6.56	14198-1	85	3	0.988	2.22
06666	122	2	1.16	4.64	14199-2	85	3	0.262	0.20
06686	123	2	0.93	3.72	14211-1	86	10	0.384	0.96

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Squash-1 (continued)					Squash-1 (continued)			
14211	86	1	3.84	0.96	14321-1	109	2	1.52	3.80
14223-1	86	3	0.592	1.33	14336	110	1	40.34	10.1
14231-1	86	2	0.252	0.57	14343-1	113	1	2.12	5.30
14231	86	1	1.66	0.42	14344-1	113	1	2.49	6.22
14239-1	86	3	0.609	1.37	14345-1	113	1	1.84	4.60
14259-1	89	3	0.221	0.50	14346-1	113	8	2.56	5.12
14266	90	1	9.24	2.31	14346	113	1	20.50	5.12
14266s-1	90	8	1.08	2.15	14350-1	113	1	1.36	3.40
14266-1(1)	90	1	0.800	1.60	14351-1	113	1	1.17	2.92
14266-1(2)	90	1	1.15	2.30	14365-1	139	2	2.22	5.55
14266-1(3)	90	1	0.557	1.11	14366-2	139	1	29.5	14.7
14266-1(4)	90	1	1.38	2.76	14383-1	140	2	3.11	7.78
14266-1(5)	90	1	0.979	1.96	14399-1	142	1	1.86	4.65
14266-1(6)	90	1	1.14	2.28	14400-1	142	1	2.36	5.90
14266-1(7)	90	1	1.27	2.54	14409-2*	142	1	0.300	0.300
14266-1(8)	90	1	1.33	2.66	14410-1	142	1	4.96	12.4
14266-2	90	1	0.636	0.16	14411-1	142	2	2.36	5.90
14272-1	108	3	1.03	2.58	14422-1	142	2	2.26	5.65
14289-2	108	1	0.832	1.04	14431-1	142	2	1.77	4.43
14291-1	109	2	1.41	3.52	14442-1	142	2	1.65	4.12
14292-2	109	2	1.08	1.35	14444-2	142	2	3.14	5.50
14293-2*	109	2	0.156	0.16	14445-1	142	2	2.27	5.68
14318-1	109	3	1.18	2.95	14451-2	142	1	23.6	11.8

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Squash-1 (continued)			
14475-1	144	2	2.00	5.00
06005-1	29	3	0.0837	0.19
06017	30	3	0.195	0.15
06026	30	2	0.222	0.17
06038	30	2	0.184	0.14
06049	56	1	3.34	2.50
06057	57	1	4.14	3.10
06073	57	1	0.981	0.74
06084	58	1	2.46	1.85
06093-1	83	3	0.863	1.94
06108-1	83	3	0.854	1.92
06110-1	84	3	0.944	2.12
06120-2*	84	2	0.230	0.17
06140-1	85	3	0.834	1.88
06156-1	85	3	0.596	1.34
06157-2	85	1	0.787	0.59
06158-2*	85	1	0.273	0.02
06164-1	85	3	0.580	1.30
06177-1	86	3	0.536	1.21
06188-1	86	3	0.770	1.73
06218-1	108	1	1.28	3.20
06234-1	108	1	1.57	3.92
06245-1	108	1	1.12	2.80
06288-1	139	3	1.30	3.25
14504-1	109	2	0.964	2.41
14512-1	111	1	1.23	3.08
14525-1	111	2	1.59	3.98
14536-1	113	2	2.48	6.20
14549-1	113	2	3.02	7.55
14561-1	116	2	1.92	4.80
	Squash-2			
14815-1	92	5	0.485	1.21
14846-1	100	12	1.12	3.36
14846-2*	100	3	0.201	0.15
14846-3	100	1	1.97	0.49
14846	100	1	22.3	5.58
06647-1	62	11	0.0979	0.40
06647	62	2	0.538	0.40
	Squash-4			

Table C-2 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Tomato-1					Tomato-1 (continued)			
14008	29	12	0.038	0.23	06051	56	2	0.114	0.23
14016	29	10	0.032	0.19	06060	57	3	0.140	0.28
14024	30	6	0.026	0.15					
14033	30	6	0.031	0.18		Tomato-2			
14037	30	6	0.046	0.28					
14042	30	6	0.027	0.16	14370	75	1	0.678	0.68
14064	31	6	0.044	0.27	14389	76	1	0.706	0.71
14074	31	6	0.025	0.15	14447	78	1	1.141	1.14
14086	32	6	0.025	0.15	14478	80	1	0.915	0.92
14099	32	6	0.027	0.16					
14100	32	6	0.030	0.18		Tomato-3			
14119	58	3	0.103	0.21					
14132	59	2	0.141	0.28	14849	130	3	2.56	2.56
14280	108	1	1.88	0.94					
14297	109	1	2.14	1.07		Tomato-4			
14401	142	1	2.30	1.15					
14413	142	1	1.70	0.85	14830	92	2	0.820	1.64
14423	142	1	2.40	1.20	06665	90	4	0.109	0.22
14432	142	1	3.58	1.79	06687	91	5	0.065	0.13
06012	29	20	0.0047	0.028					
06018	30	24	0.0051	0.031					
06029	30	20	0.0061	0.037					
06041	30	12	0.0059	0.035					

Table C-2 (continued)

NOTES:

Beans: Plantings 1, 2 and 3 were bush beans; plantings 4, 5, 6 and 7 were pole or climbing beans All plantings averaged 3 plants/square foot (3 plants/hill in rows 2 feet apart and hills spaced 1/2 foot apart). Samples 14004 to 14098 averaged 8 leaves/plant; samples 06006 to 06040 averaged 6 leaves/plant.

Beets: Plants were thinned to spacings of 1/2 foot in rows 2 feet apart to give an average planting density of 1 plant/square foot. This density was decreased somewhat by sampling as the operation progressed; however, all w_p values were computed on the basis of 1 plant/square foot.

Cabbage: Plants were thinned to spacings of 1 foot in rows 2 feet apart to give an average planting density of 0.5 plants/square foot Although sampling of the younger plants was carried out with spacings as near as 1/2 foot after an initial thinning, all w_p values were calculated for the final spacing of the mature plants.

Carrot: Plants were thinned to spacings of about 1/4 foot in rows 2 feet apart to give an average planting density of 2 plants/square foot (although the earlier sampling was carried out at a higher density, as with the cabbage).

Corn: Plants were in hills 1.5 feet apart in rows 2 feet apart; the hills were thinned to 2 plants each, giving an average planting density of 2/3 plant/square foot.

Lettuce: Plants were thinned to spacings of 1/4 foot in rows 2 feet apart to give an average planting density of 2 plants/square foot.

Onions: Plants were initially thinned to half-inch spacings in rows 2 feet apart to give an average planting density of 12 plants/square foot (samples 06053 to 06175 and 06663 to 06702). This density was decreased in further thinning to 6 plants/square foot for samples 14279 to 14477 and 06216 to 06321. Final thinning to 1/4 foot spacings decreased the planting density to 2 plants/

Table C-2 (concluded)

square foot (samples 14503 decreased the planting density to 2 plants/square foot (samples 14503 to 14850).

Pea: Plants averaged 4 inches apart in rows 2 feet apart to give an average planting density of 1.5 plants/square foot. In one sampling period when the plants were bearing fruit, fruit counts gave an average of 7 5 pods/plant (11.25 pods/square foot); otherwise the number on the sampled vine is given.

Pepper: Plants on hills averaged 8 inches apart in rows 2 feet apart with 2 plants/hill to give an average planting density of 1.5 plants/square foot.

Potato: Plants were in hills 1 foot apart in rows 2 feet apart to give an average planting density of 0.5 plant/square foot.

Radish: Plants were thinned to a spacing of about 1.5 inches in rows 2 feet apart to give an average planting density of 4 plants/square foot.

Squash: Plants initially were in hills 2 feet apart in rows 2 feet apart with 3 plants/hill to give an average planting density of 0.75 plant/square foot (samples 14003 to 14171 and 06005 to 06084). Plants were later thinned to 1 plant/hill, which decreased the planting density to 0.25 plant/square foot (samples 14198 to 14846 and 06093 to 06647). Average number of leaves/plant was as follows: 06005 to 06084, 3; 14003 to 14096, 5; 14198 to 14266 and 06093 to 06188, 9; and 14272 to 14815 and 06218 to 06288, 10. Average number of flowers/plant were as follows: 14108 to 14171, 2; 06093 to 06188, 3; and 14272 to 14475, 4. Average number of fruits/plant were as follows: 14272 to 14336, 5; and 14365 to 14475, 9

Tomato: Due to the ease with which the ceniza-arena killed off the tomato plants, the average planting density was different for each sampling period. The average planting densities for the various samples were approximated as follows: 14008 to 14100 and 06012 to 06041, 6; 14110 to 14132 and 06051 to 06060, 2; 14280 to 14432, 0.5; 14370 to 14849, 1; 14830 and 06665 to 06687, 2. Normally, average values of the planting density would be between 0.5 and 1.0 plants/square foot

Table C-3

AGE, WEIGHT, AND SURFACE DENSITY OF CEREAL GRAIN PLANTS AND PLANT PARTS

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Barley-1					Barley-1 (continued)			
14058	32	8	0.0922	7.19	14272	91	5	1.97	59.0
14071	32	27	0.0929	7.25	14285-2	109	5	1.05	31.4
14093	33	22	0.0951	7.42	14286	109	5	1.64	49.3
14117	59	10	0.759	41.7	14305-2	110	5	1.08	32.3
14127	59	23	0.583	32.1	14306	110	5	1.18	35.3
14136	60	19	0.473	26.0	14310-2	110	5	0.913	27.4
14143	60	14	0.652	35.9	14315-2	110	5	0.739	22.2
14150	60	17	0.584	32.1	14320-2	110	5	0.572	17.2
14158	60	12	0.521	28.7	14327-2	110	5	0.603	18.1
14167	62	10	0.576	31.7	14333-2	110	5	0.598	17.9
14194	66	12	0.494	27.1	14359-2	140	5	0.986	29.6
14205	87	6	1.44	43.3	14381-1,3	141	5	1.58	47.4
14208-2	87	5	0.725	21.8	14381-2	141	5	1.22	36.4
14222-1,3	87	5	1.20	35.9	14381	141	5	2.79	83.6
14222-2	87	5	0.636	19.1	14395-1,3	143	5	1.84	55.4
14222	87	5	1.83	55.0	14395-2	143	5	1.19	35.7
14229-2	87	5	0.535	16.0	14395	143	5	3.04	91.0
14236-2	87	5	0.487	14.6	14419-2	143	5	1.03	30.9
14243-2	87	5	0.750	22.5	14429-2	143	5	1.05	31.6
14250-1,3	89	5	1.34	40.1	14438-1,3	143	5	1.78	53.3
14250-2	89	5	0.672	20.2	14438-2	143	5	0.946	28.4
14250	89	5	2.01	60.3	14438	143	5	2.73	81.8
14254-2	90	5	0.843	25.3	14462-2	143	5	0.959	28.8
14257	90	5	1.99	59.6					

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Barley-1 (continued)					Barley-1 (continued)			
14466-2	143	5	0.822	24.6	06191	87	5	1.43	41.4
14471	143	5	2.00	59.8	06199-2	107	5	1.11	32.3
14481	145	5	1.11	33.3	06200	107	5	1.83	53.1
14485-2	145	10	0.700	21.0	06206-2	107	5	0.743	21.5
06011	30	4	0.0899	7.01	06207	107	5	1.54	44.7
06021	31	28	0.101	7.88	06222-2	109	5	0.923	26.8
06032	31	17	0.100	7.80	06225	109	5	1.58	45.8
06035	31	16	0.102	7.96	06237-2	109	5	0.808	23.4
06048	56	10	0.496	27.3	06249-2	109	5	0.898	26.0
06066	58	26	0.516	28.4	06256-1,3	109	5	1.06	30.9
06067	58	25	0.508	27.9	06256-2	109	5	0.977	28.3
06074	58	21	0.504	27.7	06256	109	5	2.04	59.2
06080	59	15	0.538	29.6	06277-1,3	112	5	0.998	28.9
06102-2	84	5	0.770	22.3	06277-2	112	5	0.920	26.7
06105	84	5	1.66	48.3	06277	112	5	1.92	55.6
06124-2	85	5	0.680	19.7	06286-2	138	5	0.782	22.7
06126	85	5	1.51	43.8	06287-2	138	5	0.891	25.8
06132-2	86	5	0.598	17.3	06303	143	5	1.105	32.0
06143	86	5	1.12	32.6	06307-2	143	10	0.853	24.7
06148-2	86	5	0.559	16.2					
06159	86	5	1.11	32.1		Barley-2			
06069-2	86	5	0.590	17.1					
06180-2	87	5	0.667	19.3	14675	56	5	0.481	7.22
06186-2	87	5	0.610	17.7	14705	57	5	0.465	6.98

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Barley-2 (continued)					Oat-1 (continued)			
14720	60	10	0.413	6.20	14070	32	27	0.163	13.7
14812	90	10	0.792	11.9	14092	33	10	0.155	13.0
14829	91	10	0.770	11.6	14116	59	10	0.628	47.7
06415	25	20	0.0662	3.31	14126	59	21	0.305	23.2
06427	26	20	0.0544	2.72	14137	60	22	0.495	37.6
06436	27	20	0.0657	3.28	14144	60	24	0.522	39.7
06458	27	20	0.0637	3.18	14149	60	15	0.637	48.4
06468	28	20	0.0783	3.92	14159	60	17	0.489	37.2
06477	56	10	0.305	4.58	14168	62	10	0.387	29.4
06537	58	10	0.315	4.72	14183	64	17	0.487	37.0
06555	58	10	0.302	4.53	14195	66	15	0.60 .	45.9
06572	58	10	0.285	4.28	14206	87	8	1.12	33.6
06590	59	10	0.285	4.28	14207-2	87	5	0.329	9.87
06603	60	10	0.362	5.43	14220-1,3	87	5	0.801	24.0
06613	61	10	0.403	6.04	14220-2	87	5	0.244	7.32
06625	61	10	0.383	5.74	14220	87	5	1.04	31.4
06631	61	10	0.668	10.0	14228-2	87	5	0.229	6.87
06651	62	10	0.439	6.58	14237-2	87	5	0.243	7.29
06670	90	10	0.946	14.2	14244-2	87	5	0.377	11.3
06675	90	10	0.928	14.9	14248-1,3	89	5	1.46	43.9
06690	91	5	0.961	14.4	14248-2	89	5	0.355	10.6
					14248	89	5	1.82	54.5
	Oat-1				14253-2	9.	5	[illegible]	12.1
14059	32	6	0.141	11.8	14261	90	5	1.28	38.3

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Oat-1 (continued)					Oat-1 (continued)			
14271	91	5	1.47	44.2	14482	145	5	2.20	58.9
14283-2	109	5	0.737	22.1	14486-2	145	5	0.867	23.2
14284	109	5	1.26	38.0	14498-2	174	5	1.37	36.8
14303-2	110	5	0.539	16.2	14521-2	176	5	1.51	40.4
14304	110	2	1.38	41.4	14533-2	176	5	1.28	34.4
14309-2	110	5	0.570	17.1	14544-2	178	5	0.704	18.9
14314-2	110	5	0.687	20.6	14556-2	178	5	1.78	47.6
14326-2	110	5	0.564	16.9	06009	30	6	0.0934	7.85
14332-2	110	5	0.598	17.9	06020	31	32	0.0787	6.61
14358-2	140	5	1.14	30.7	06031	31	20	0.107	8.99
14378-1,3	141	5	1.80	48.4	06034A	31	20	0.124	10.4
14378-2	141	5	0.647	17.3	06047	56	10	0.776	59.0
14378	141	5	2.45	65.8	06065	58	24	0.408	31.0
14394-1,3	143	5	1.18	31.6	06068	58	30	0.626	47.6
14394-2	143	5	0.842	22.6	06075	58	22	0.692	52.6
14394	143	5	2.02	54.2	06081	59	10	0.712	54.1
14418-2	143	5	1.11	29.7	06101-2	84	5	0.544	16.8
14428-2	143	5	0.732	19.6	06104	84	5	2.28	70.7
14437-1,3	143	5	1.04	27.7	06123-2	85	5	0.668	20.7
14437-2	143	5	0.629	16.8	06125	85	5	2.52	78.1
14437	143	5	1.66	44.6	06131-2	86	5	0.615	19.1
14461-2	143	5	0.835	22.4	06142	86	5	1.98	61.2
14465-2	143	5	0.687	18.4	06150-2	86	5	0.423	13.1
14470	143	5	2.07	55.4	06161	86	5	1.79	55.4

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Oat-1 (continued)					Oat-2			
06171-2	86	5	0.413	12.8	14589	18	20	0.0201	1.61
06179-2	87	5	0.451	14.0	14603	19	20	0.0246	1.97
06185-2	87	5	0.326	10.1	14623	20	20	0.0218	1.74
06190	87	5	2.32	71.8	14638	21	20	0.0283	2.26
06197-2	107	5	0.787	24.4	14668	26	20	0.0421	3.37
06198	107	5	2.24	69.3	14673	54	10	0.327	16.4
06205	107	5	1.70	52.8	04687	54	10	0.319	16.0
06221-2	109	5	0.603	18.7	14703	55	5	0.378	18.9
06227	109	5	1.89	58.6	14718	58	10	0.274	13.7
06236-2	109	5	0.736	22.8	14748	63	10	0.322	16.1
06248-2	109	5	0.558	17.3	14764	64	10	0.432	21.6
06254-1,3	109	5	1.74	54.1	14778	64	10	0.423	21.2
06254-2	109	5	0.497	15.4	14792	64	10	0.479	24.0
06254	109	5	2.24	69.5	14809	88	10	0.654	32.7
06273-1,3	112	5	1.25	38.8	14826	90	5	1.08	53.9
06273-2	112	5	0.515	16.0	06476	56	10	0.320	16.0
06273	112	5	1.77	54.8	06503	57	10	0.235	11.8
06285-2	138	5	1.08	23.7	06516	57	10	0.295	14.8
06304	143	5	2.73	59.8	06535	58	10	0.276	13.8
06305	143	10	1.04	22.9	06554	58	10	0.301	15.0
06327-2	173	5	1.24	27.3	06571	58	10	0.375	18.8
06337-2	174	5	0.678	14.8	06589	59	10	0.222	11.1

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Oat-2 (continued)					Rye-1 (continued)			
06602	60	10	0.331	16.6	14258	90	5	1.00	35.0
06612	61	10	0.360	18.0	14288-1,3	109	5	0.644	22.5
06624	61	10	0.321	16.0	14288-2	109	5	0.246	8.6
06630	61	10	0.335	16.8	14288	109	5	0.890	31.2
06650	62	10	0.300	15.0	14307-2	110	5	0.212	7.4
					14311-2	110	5	0.238	8.3
	Rye-1				14316-2	110	5	0.165	5.8
					14328-2	110	5	0.270	9.4
14010	30	8	0.0756	6.70	14334-2	110	5	0.166	5.8
14019	30	31	0.0747	6.61	14360-2	140	5	0.262	9.2
14026	31	7	0.0775	6.87	14379-1,3	141	5	0.539	18.9
14037	32	5	0.0780	6.91	14379-2	141	5	0.133	4.7
14069	32	32	0.0773	7.07	14379	141	5	0.673	23.6
14082	33	33	0.0678	6.40	14397-1,3	143	5	1.06	37.1
14094	33	28	0.0725	5.80	14397-2	143	5	0.314	11.0
14114	59	10	0.108	15.1	14397	143	5	1.38	48.3
14125	59	41	0.130	18.2	14420-2	143	5	0.265	9.3
14145	60	22	0.111	15.6	14426-2	143	5	0.200	7.0
14151	60	24	0.0921	12.9	14430-2	143	5	0.265	9.3
14160	60	15	0.134	18.8	14440-1,3	143	5	1.07	37.4
14169	62	10	0.132	18.4	14440-2	143	5	0.195	6.8
14196	66	34	0.117	16.4	14440	143	5	1.27	44.4
14255-2	90	3	0.202	7.1	14463-2	143	5	0.259	9.1

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Rye-1 (continued)					Rye-1 (continued)			
14467-2	143	5	0.171	6.0	14674	235	5	1.28	44.8
14472	143	5	1.14	39.9	14676-2	235	5	0.422	14.8
14483	145	5	1.30	45.5	14706-2	236	5	0.492	17.2
14487-2	145	10	0.195	6.8	06010	30	5	0.0590	4.21
14500-2	174	5	0.377	13.2	06022	31	25	0.0493	3.52
14522-2	176	5	0.282	9.9	06034	31	35	0.0494	3.53
14534-2	176	5	0.285	10.0	06037	31	25	0.0493	3.52
14545-2	178	5	0.194	6.8	06045	56	10	0.228	35.2
14558-2	178	5	0.231	8.1	06063	58	45	0.185	28.5
14559	178	5	1.08	37.8	06069	58	18	0.176	27.1
14568-2	181	5	0.265	9.3	06076	58	27	0.272	41.9
14569	181	5	1.32	46.2	06082	59	10	0.190	29.3
14574	199	5	0.906	31.7	06128	85	3	0.813	28.5
14575-2	199	5	0.263	9.2	06133-2	86	3	0.211	7.4
14578	199	5	1.70	59.5	06147-2	86	3	0.192	6.7
14579-2	199	5	0.262	9.2	06182-2	87	3	0.254	8.9
14601-2	200	5	0.268	9.4	06187-2	87	3	0.188	6.6
14607-2	200	5	0.279	9.8	06202-1,3	107	5	0.741	25.9
14639-1,3	202	5	1.17	41.0	06202-2	107	5	0.183	6.4
14639-2	202	5	0.304	10.6	06202	107	5	0.924	32.3
14639	202	5	1.48	51.8	06209-1,3	107	5	0.583	20.4
14652-2	206	5	0.396	13.9	06209-2	107	5	0.143	5.0
14653	206	5	1.51	52.8	06209	107	5	0.726	25.4
14669-2	207	5	0.322	11.3	06223-2	109	5	0.115	4.0
14670	207	5	1.55	54.2	06224	109	5	0.602	21.1

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Rye-1 (continued)					Rye-1 (continued)			
06238-2	109	5	0.184	6.4	06393-2	201	5	0.246	8.6
06250-2	109	5	0.135	4.7	06394	201	5	0.986	34.5
06258-1,3	109	5	0.683	23.9	06407-2	201	5	0.192	6.7
06258-2	109	5	0.138	4.8	06408	201	5	0.810	28.4
06258	109	5	0.821	28.7	06414-2	202	5	0.193	6.8
06279-1,3	112	5	1.14	39.9	06428-2	203	5	0.220	7.7
06279-2	112	5	0.183	6.4	06435-2	203	5	0.230	8.0
06279	112	5	1.32	46.2	06436	203	5	0.787	27.5
06283-2	138	5	0.215	7.5	06447-2	204	5	0.303	10.6
06305	143	5	1.47	51.4	06448	204	5	1.08	37.8
06308-2	143	10	0.217	7.6	06459-2	204	5	0.272	9.5
06328-2	173	5	0.225	7.9	06469-2	205	5	0.315	11.0
06329	173	5	1.22	42.7	06478	233	5	1.62	56.7
06336-2	174	5	0.265	9.3	06488-2	233	5	0.511	17.9
06345	176	4	0.839	29.4	06538-2	235	5	0.315	11.0
06346-2	176	5	0.194	6.8	06539	235	5	1.24	43.4
06351-2	179	5	0.158	5.5	06556-2	235	5	0.394	13.8
06352	179	5	0.944	33.0	06591-2	236	5	0.440	15.4
06357-2	197	5	0.275	9.6	06633-2	238	10	0.459	16.1
06358	197	5	1.55	54.2	06671-2	267	6	0.378	13.2
06359-2	197	5	0.167	5.8					
06360	197	5	0.798	27.9		Wheat-1			
06378-2	200	5	0.230	8.0					
06379	200	5	1.21	42.4	14009	30	11	0.0585	5.67

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Wheat-1 (continued)					Wheat-1 (continued)			
14017	30	22	0.0564	3.55	14186	63	15	0.320	35.5
14018	30	15	0.0519	2.23	14187	63	14	0.320	35.5
14025	31	15	0.0565	5.48	14188	63	12	0.307	34.1
14055	32	10	0.0546	5.30	14189	63	20	0.318	35.3
14056	32	10	0.0511	4.96	14190	64	20	0.282	31.3
14067	32	52	0.0617	9.17	14191	64	18	0.360	40.0
14068	32	48	0.0507	6.96	14197	66	16	0.305	33.9
14081	33	43	0.0563	6.91	14204	87	11	0.640	19.2
14091	33	25	0.0565	4.04	14210-2	87	5	0.182	5.46
14115	59	10	0.314	34.9	14218-1,3	87	5	0.697	20.9
14124	59	34	0.313	36.7	14218-2	87	5	0.143	4.29
14135	60	44	0.250	37.9	14218	87	5	0.840	25.2
14146	60	23	0.354	39.3	14227-2	87	5	0.161	4.83
14148	60	36	0.309	34.3	14235-2	87	5	0.121	3.63
14161	60	20	0.375	41.6	14242-2	87	5	0.181	5.43
14170	62	10	0.358	39.7	14246-1,3	89	5	0.737	22.1
14177	63	10	0.414	46.0	14246-2	89	5	0.175	5.25
14178	63	15	0.320	35.5	14246	89	5	0.912	27.4
14179	63	15	0.318	35.3	14252-2	90	5	0.153	4.59
14180	63	14	0.306	34.0	14256	90	5	0.718	21.5
14181	63	10	0.304	33.7	14270	91	5	0.847	25.4
14182	63	12	0.341	37.9	14281-2	109	5	0.272	8.16
14184	63	9	0.328	36.4	14282	109	5	0.856	25.7
14185	63	17	0.312	34.6	14301-2	110	5	0.232	6.96

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Wheat-1 (continued)					Wheat-1 (continued)			
14302	110	2	0.675	20.2	14460-2	143	5	0.336	12.5
14308-2	110	5	0.270	8.10	14464-2	143	5	0.346	12.9
14313-2	110	5	0.207	6.21	14469	143	5	0.762	28.3
14319-2	110	5	0.220	6.60	14480	145	5	0.566	21.1
14325-2	110	5	0.176	5.28	14484-2	145	10	0.268	9.97
14331-2	110	5	0.171	5.13	14499-2	174	5	0.646	24.0
14338-2	114	5	0.329	9.87	14520-2	176	5	0.643	23.9
14339-2	114	5	0.329	9.87	14532-2	176	5	0.646	24.0
14340-2	114	5	0.369	11.1	14543-2	178	5	0.752	28.0
14341-2	114	5	0.345	10.4	14557-2	178	5	0.650	24.2
14342-2	114	5	0.333	10.0	06008	30	10	0.0602	3.61
14357-2	140	5	0.345	12.8	06019	31	21	0.0842	5.05
14375-1,3	141	5	0.552	20.5	06033	31	20	0.0828	4.97
14375-2	141	5	0.391	14.5	06036	31	25	0.0707	4.24
14375	141	5	0.945	35.1	06046	56	10	0.443	41.2
14391-1,3	143	5	0.692	25.7	06062	58	27	0.347	32.3
14391-2	143	5	0.341	12.7	06070	58	23	0.282	26.2
14391	143	5	1.03	38.4	06077	58	21	0.249	23.2
14417-2	143	5	0.331	12.3	06083	59	10	0.442	41.1
14425-2	143	5	0.383	14.2	06100-2	84	5	0.212	5.72
14427-2	143	5	0.267	9.93	06103	84	5	1.15	31.2
14434-1,3	143	5	0.649	24.1	06122-2	85	6	0.212	5.72
14434-2	143	5	0.311	11.6	06127	85	5	0.945	25.5
14434	143	5	0.960	35.7	06130-2	86	5	0.200	5.40

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Wheat-1 (continued)					Wheat-2			
06141	86	5	0.892	24.1	06338-2	174	5	0.683	23.2
06149-2	86	5	0.158	4.27	14681	55	10	0.326	7.69
06060	86	5	0.968	26.1	14686	55	10	0.425	10.0
06170-2	86	5	0.170	4.59	14704	56	10	0.318	7.50
06178-2	87	5	0.182	4.91	14719	59	10	0.332	7.84
06184-2	87	5	0.158	4.27	14737-2	61	12	0.181	4.27
06189	87	5	0.973	26.3	14749	64	10	0.872	20.6
06195-2	107	5	0.428	11.6	14750-2	64	12	0.236	5.57
06196	107	5	1.05	28.2	14765	65	10	0.814	19.2
06203-2	107	5	0.374	10.1	14766-2	65	12	0.229	5.40
06204	107	5	1.19	32.2	14779	65	10	0.903	21.3
06220-2	109	5	0.437	11.8	14780-2	65	12	0.238	5.62
06226	109	5	1.10	29.6	14782	65	10	1.14	26.9
06235-2	109	5	0.425	12.8	14793	65	10	0.976	23.0
06247-2	109	5	0.352	9.50	14794-2	65	10	0.191	4.70
06252-1,3	109	5	0.790	21.3	14810	89	10	1.69	39.8
06252-2	109	5	0.337	9.10	14811-2	89	10	0.440	10.8
06252	109	5	1.13	30.4	14827-2	91	5	0.548	13.5
06275-1,3	112	5	0.901	24.3	14828	91	3	1.67	41.0
06275-2	112	5	0.372	10.0	14835	91	10	1.97	48.4
06275	112	5	1.27	34.4	14851-2*	100	100	0.737	18.1
06284-2	138	10	0.295	10.0	06479	55	10	0.401	9.18
06302	143	5	0.662	22.4	06502	56	10	0.310	7.10
06306-2	143	10	0.346	11.7	06515	56	10	0.326	7.47
06326-2	173	5	0.632	21.1	06534	57	10	0.424	9.71

* Grain, not dried

Table C-3 (continued)

Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)	Sample Number	Age (days)	Number of Parts	m_p (gm)	w_p (gm/sq ft)
	Wheat-2 (continued)								
06553	57	10	0.430	9.85					
06570	57	10	0.392	8.98					
06588	58	10	0.404	9.25					
06601	59	10	0.393	9.00					
06611	60	10	0.518	11.9					
06623	60	10	0.414	9.48					
06629	60	10	0.510	11.7					
06648	61	10	0.587	13.4					
06649-2	61	12	0.192	4.40					
06668-2	89	10	0.406	9.30					
06669	89	10	1.26	28.8					
06674-2	89	8	0.840	19.2					
06691-2	90	5	0.455	10.4					
06692	90	5	1.70	38.8					
06695	95	15	1.81	41.4					
06706-2[a]	100	100	0.925	21.2					

a Grain, not dried

NOTES:

Table C-3 (concluded)

The average planting density of the cereal grains was determined by counting the number of grain stalks or stems within the sampled areas. For the counts made prior to stooling, the stalk counts were the same as plant counts. The average planting densities for each of several series of sampling numbers are summarized below:

Barley: samples 14058 to 14093 and 06011 to 06035, 78 stalks/square foot; samples 14117 to 14194 and 06048 to 06080, 55 stalks/square foot; samples 14205 to 14485, 30 stalks/square foot; samples 06102 to 06307, 29 stalks/square foot; samples 06415 to 06468, 50 stalks/square foot; and samples 14675 to 14829 and samples 06477 to 06690, 15 stalks/square foot.

Oats: samples 14046 to 14092 and 06009 to 06034A, 84 stalks/square foot; samples 14116 to 14195 and 06047 to 06081, 76 stalks/square foot; samples 14207 to 14332, 30 stalks/square foot; samples 06101 to 06273, 31 stalks/square foot; samples 14378 to 14556, 27 stalks/square foot; samples 06285 to 06337, 22 stalks/square foot; samples 14589 to 14668, 80 stalks/square foot; and samples 14673 to 14826 and 06476 to 06650, 50 stalks/square foot.

Rye: samples 14010 to 14094, 89 stalks/square foot; samples 06010 to 06037, 71 stalks/square foot; samples 14114 to 14196, 154 stalks/square foot; sample 06045 to 06082, 154 stalks/square foot; and (assumed for) samples 14255 to 14706 and 06128 to 06671, 35 stalks/square foot.

Wheat: samples 14009 to 14091, 97 stalks/square foot; samples 06008 to 06036, 60 stalks/square foot; samples 14115 to 14197, 111 stalks/square foot; samples 06046 to 06083, 93 stalks/square foot; samples 14204 to 14342, 30 stalks/square foot; samples 06100 to 06275, 27 stalks/square foot; samples 14357 to 14557, 37 stalks/square foot; samples 06248 to 06338, 34 stalks/square foot; samples 14681 to 14851, 24.6 stalks/square foot; and samples 06479 to 06706, 22.9 stalks/square foot.

Table C-4
WEIGHTS OF TREE LEAVES AND TWIGS

Sample Number	Number of Parts	m_L (gm)	Sample Number	Number of Parts	m_L (gm)	Sample Number	Number of Parts	m_L (gm)
	Avocado			Camphor			Camphor (continued)	
14509-1	10	0.100 (new)	06330-1	24	0.0488	06449-1,3	24	0.0681
14510-1	10	0.235 (new)	06331-1	24	0.0699	06450-1,3	14	0.0780
14511-1	10	0.310 (old)	06339-1	24	0.0348	06470-1,3	23	0.0585
14524-1	10	0.154 (new)	06347-1	20	0.0419	06471-1,3	19	0.0717
14535-1	10	0.184 (new)	06353-1	32	0.0525	06481-1	12	0.0747
14546-1	10	0.108 (new)	06367-1,3	14	0.165	06481-1,3	12	0.0858
14560-1	18	0.207 (new)	06368-1,3	16	0.120	06482-1	30	0.0541
14570-1	19	0.235 (new)	06369-1,3	24	0.0902	06482-1,3	30	0.0622
14576-1,3	12	0.297 (old)	06370-1,3	16	0.0627	06517-1	16	0.0806
14577-1,3	8	0.244 (new)	06381-1,3	16	0.0921	06517-1,3	16	0.0952
14624-1,3	9	0.324 (both)	06382-1,3	12	0.126	06518-1	17	0.0721
14641-1,3	17	0.205 (new)	06383-1,3	8	0.106	06518-1,3	17	0.0810
14642-1,3	17	0.478 (old)	06395-1,3	16	0.0821	06540-1	25	0.0527
14644-1,3	15	0.368 (new)	06396-1,3	15	0.0756	06540-1,3	25	0.0612
14682-1	17	0.292 (new)	06397-1,3	12	0.0846	06541-1	22	0.0666
14683-1	16	0.290 (new)	06416-1,3	32	0.0517	06541-1,3	22	0.0767
14831-1	93	0.0344 (new)	06417-1,3	18	0.0932	06557-1	23	0.0685
14831-3	93	0.0798	06429-1,3	14	0.120	06557-1,3	23	0.0759
14831-1,3	93	0.114 (new)	06430-1,3	12	0.0798	06558-1	16	0.0528
14832-1	28	0.223 (old)	06432-1,3	16	0.0933	06558-1,3	16	0.0596
14832-3	28	0.128	06433-1,3	40	0.0663	06592-1	12	0.0912
14832-1,3	28	0.352 (old)	06434-1,3	14	0.0671	06592-1,3	12	0.100

Table C-4 (continued)

Sample Number	Number of Parts	m_L (gm)
Camphor (continued)		
06593-1	22	0.0626
06593-1,3	22	0.0744
06672-1	23	0.0853
06673-1	28	0.0725
06693-1	60	0.103
Grapefruit[a]		
16020-1	5	0.629 (2-yr)
16020-1	6	0.530 (1-yr)
16022-1	6	0.299 (new)
16030-1	6	0.661 (2-yr)
16031-1	6	0.276 (new)
16032-1	6	0.422 (1-yr)
16057s-1	12	0.625
16066s-1	9	0.362
16134s-1	68	0.206
16155s-1	21	0.616
16166s-1	11	0.247
16173s-1	7	0.471
16184s-1	11	0.527
Grapefruit (continued)		
16209s-1	25	0.204
16217s-1	8	0.218
16229s-1	12	0.300
16247s-1	18	0.649
16260s-1	13	0.378
16269s-1	9	0.193
16280s-1	11	0.541
16288s-1	8	0.235
16289-3	18[b]	0.170
16289-1,3	18[b]	0.819
16290-3	13[b]	0.0592
16290-1,3	13[b]	0.437
16291-3	9[b]	0.0419
16291-1,3	9[b]	0.235
16292-3	8[b]	0.125
16292-1,3	8[b]	0.360
16292s-3	48[b]	0.109
16292s-1,3	48[b]	0.529
16293-1	45	0.547
16294-1	85	0.329
16295-1	147	0.341
16296-1	91	0.530
16297-1	248	0.248
16298-1	223	0.239
Grapefruit (continued)		
16299-1	52	0.313
16300-1	175	0.308
Laurel		
15002-1	11	0.117
15003-1	9	0.092
15004-1	11	0.075
15005-1	10	0.113
15006-1	10	0.0736
15007-1	12	0.109
15008-1	13	0.093
15009-1	11	0.110
15010-1	11	0.126
15011-1	14	0.0833
15012-1	16	0.0983
15013-1	10	0.102
15014-1	10	0.131
15015-1	15	0.0981
15017-1	10	0.122
15018-1	12	0.136
15019-1	15	0.118
15020-1	11	0.180
15021-1	10	0.134

a For individual leaf samples 16046 to 16292 see Table 17

b Number of leaves along stem or branch; m_L is total dry weight per leaf

Table C-4 (continued)

Sample Number	Number of Parts	m_L (gm)	Sample Number	Number of Parts	m_L (gm)	Sample Number	Number of Parts	m_L (gm)
	Laurel			Laurel (continued)			Laurel (continued)	
15022-1	15	0.125	15047-1	10	0.0997	15073-1	1	0.115
15023-1	11	0.113	15048-1	10	0.0937	15074-1	1	0.138
15024-1	13	0.192	15049-1	9	0.0952	15075-1	1	0.132
15025-1	12	0.0830	15052-1	10	0.130	15076-1	1	0.182
15026-1	13	0.124	15053-1	10	0.106	15077-1	1	0.0759
15027-1	11	0.123	15054-1	14	0.0855	15068-1	1	0.0939
15028-1	12	0.116	15055-1	14	0.100	15079-1	1	0.187
15029-1	6	0.165	15056-1	12	0.104	15080-1	1	0.118
15030-1	10	0.108	15057-1	13	0.101	15081-1	1	0.120
15031-1	12	0.0839	15058-1	22	0.0970	15082-1	1	0.158
15032-1	24	0.0628	15059-1	12	0.0884	15083-1	1	0.181
15033-1	14	0.110	15060-1	15	0.0712	15084-1	1	0.140
15034-1	11	0.113	15061-1	15	0.0949	15085-1	1	0.132
15035-1	15	0.0934	15062-1	1	0.132	15086-1	1	0.102
15037-1	30	0.127	15063-1	1	0.128	15087-1	1	0.100
15038-1	8	0.0973	15064-1	1	0.126	15088-1	1	0.114
15039-1	10	0.104	15065-1	1	0.130	15089-1	1	0.117
15040-1	10	0.0924	15066-1	1	0.130	15089s-1	28	0.130
15041-1	10	0.0918	15067-1	1	0.137	15090-1	552	0.0958
15042-1	8	0.0924	15068-1	1	0.107	15091-1	411	0.0987
15043-1	9	0.0843	15069-1	1	0.157	15092-1	890	0.0788
15044-1	13	0.0867	15070-1	1	0.129	15903-1	592	0.0888
15045-1	12	0.0756	15071-1	1	0.0887	15095-1	145	0.0974
15046-1	10	0.0923	15072-1	1	0.155	15097-1	241	0.108

Table C-4 (concluded)

Sample Number	Number of Parts	m_L (gm)	Sample Number	Number of Parts	m_L (gm)	Sample Number	Number of Parts	m_L (gm)
Laurel (continued)			Pine 2 (continued)			Pine 2 (continued)		
15098-1	35	0.0984	16004-1,3	104	0.109	16016-1,3	112	0.0758
15099-1	47	0.0946	16006-1	76	0.0647	16018-1	570	0.0711
15100-1	39	0.0992	16006-1,3	76	0.0766	16018-1,3	570	0.0721
15101-1	48	0.0981	16007-1	82	0.0694	16019-1	114	0.0592
15102-1	34	0.0977	16007-1,3	82	0.0779	16019-1,3	114	0.0741
15103-1	33	0.0907	16008-1	110	0.0662	16038-1	220	0.0629
15104-1	35	0.0956	16008-1,3	110	0.0734	16038-1,3	220	0.0736
15105-1	47	0.106	16009-1	86	0.0652	16039-1	276	0.0650
15106-1	27	0.101	16009-1,3	86	0.0731	16039-1,3	276	0.0763
15108-1	36	0.0868	16010-1	162	0.0737	16040-1	256	0.0688
15109-1	26	0.0945	16010-1,3	162	0.0804	16040-1,3	256	0.0817
15110-1	37	0.0995	16011-1	56	0.0659	16041-1	402	0.0681
15111-1	24	0.0817	16011-1,3	56	0.0753	16041-1,3	402	0.0790
			16012-1	94	0.0612	16041s-1,3	1154	0.0779
Pine 2			16012-1,3	94	0.0678	16042-1	88	0.0625
			16013-1	68	0.0709	16042-1,3	88	0.0730
16001-1	900	0.0679	16013-1,3	68	0.0817	16043-1	72	0.0659
16001-1,3	900	0.0763	16014-1	32	0.0706	16043-1,3	72	0.0761
16002-1	310	0.0709	16014-1,3	32	0.0847	16044-1	40	0.0570
16002-1,3	310	0.0808	16014s-1,3	766	0.0763	16044-1,3	40	0.0753
16003-1	550	0.0672	16015-1	488	0.0681	16045-1	112	0.0618
16003-1,3	550	0.0758	16015-1,3	488	0.0752	16045-1,3	112	0.0748
16004-1	104	0.0680	16016-1	112	0.0635	16045s-1,3	312	0.0746

Table C-5

SUMMARY OF BACKGROUND OR C^{o}_{PNR} VALUES FOR VEGETABLES

Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)	Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)	Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)
	Bean			Beet			Cabbage (continued)	
14004	29	0.0638	14386	76	0.0207	06094	83	0.0161
14021	30	0.0250	14476	80	0.0334	06289-1	139	0.00676
14063	31	0.118	14501	109	0.0188	06289-2,3	139	0.000717
14109	58	0.0700	14551	113	0.0244	06289	139	0.00387
14172	61	0.0343	14582	134	0.0107	06565	58	0.0244
14224-1,3	86	0.0200	14610	136	0.00680	06619	61	0.0765
14224-2	86	0.00140	14669	170	0.0110	06681	91	0.0337
14224	86	0.00826	14838	92	0.0107			
14273	16	0.0507	06096	20	0.0786		Carrot	
14390	48	0.0427	06212	44	0.0621	14502	109	0.0339
14479	52	0.0107	06262	47	0.0197	14552	113	0.0230
14584	20	0.0249	06290	76	0.0279	14587	134	0.0260
14608	22	0.0351	06298	79	0.0593	14611	136	0.0117
14658	86	0.0148	06678	91	0.00921	14650	138	0.0292
14659	86	0.0180				14664	170	0.0189
14740	95	0.0303		Cabbage		14745	179	0.0199
14813	122	0.0168	14005	29	0.0635	14819	206	0.0113
14814	92	0.0164	14023	30	0.0980	06097	83	0.0685
06006	29	0.0875	14112	58	0.0230	06283	110	0.0821
06050	56	0.101	14173	61	0.0282	06294	139	0.0396
06085	58	0.0432	14226	86	0.00419	06297	142	0.0136
06293	25	0.0280	14260	89	0.00173	06322	172	0.0332
06300	28	0.0278	14274	108	0.0155	06343	175	0.00869
06320	58	0.0535	14367-1	139	0.0177	06564	143	0.0273
06344	59	0.0345	14367-2	139	0.000340	06598	145	0.0463
06364	82	0.0260	14367-3	139	0.0264	06618	146	0.0273
06366	29	0.0356	14367	139	0.00822	06682	91	0.0367
06410	26	0.0397	14384-1	140	0.0259	06683	176	0.0104
06567	11	0.0223	14384-2	140	0.00118			
06568	58	0.0259	14384-3	140	0.0228		Corn	
06621	14	0.0458	14384	140	0.00885	14022	30	0.283
06622	61	0.0319	14662	86	0.0150	14066	31	0.542
06680	16	0.0370	14663	86	0.0101	14174	61	0.0364
			14742	95	0.0129	14197	85	0.0283
			14820	122	0.00477	14262	89	0.0236
			06052	56	0.0139	14278-1	108	0.0472
			06086	58	0.0502	14278-2	108	0.0236

Table C-5 (continued)

Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)	Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)	Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)
Corn (continued)			Corn (continued)			Onion (continued)		
14278-3	108	0.0298	06688-1	153	0.00616	06299	142	0.0295
14278-4	108	0.1128	06688-2	153	0.00888	06321	172	0.0102
14278	108	0.0361	06688-3	153	0.0142			
14506	32	0.0751	06688-4	153	0.0208	Pea		
14554	36	0.0439	06688	153	0.0117	14507	27	0.00986
14588	57	0.0547	06689	127	0.0138	14555	31	0.0138
14647	24	0.0603				14586	52	0.0126
14684	56	0.0535	Lettuce			14646	24	0.0153
14824	92	0.0111	14387	76	0.0338	14670-2	88	0.00195
14825-1	92	0.00582	14473	80	0.104	14688	56	0.0123
14825-3	92	0.00353	14508	109	0.0170	14822-2	92	0.00115
14825-4	92	0.00402	14553	113	0.0256	14823	92	0.0126
14825	92	0.00426	14585	134	0.0724	06340	31	0.00898
06007	29	0.148	14590	135	0.0450	06371	52	0.00931
06025	30	0.140	14671	170	0.0292	06412	25	0.0114
06054	56	0.171	06098	83	0.168	06569-2	90	0.00146
06087	58	0.354	06260	110	0.0675	06491	57	0.00685
06099	83	0.0772	06292	139	0.0223	06562	58	0.00501
06264-1	110	0.0251	06296	79	0.0171	06596	60	0.0104
06264-2,3	110	0.0213	06323	110	0.0527	06616	61	0.0125
06264-4	110	0.0592	06342	113	0.0191	06657	90	0.0227
06264	110	0.0265	06677	91	0.0435	06679	91	0.0134
06301	28	0.0415						
06324	33	0.0754	Onion			Pepper		
06341	36	0.0298	14279	108	0.0343	14421	78	0.0357
06361-1	82	0.0349	14368	139	0.0171	14474	80	0.0627
06361-3	82	0.0127	14477	144	0.0205	14505	109	0.0857
06361	82	0.0262	14503	173	0.0148	14580	134	0.0190
06362	57	0.0852	14550	177	0.0140	14612	136	0.00774
06489-1	119	0.00911	14581	198	0.00600	14651	140	0.0214
06489-3	119	0.00618	14649	204	0.00649	14665A	170	0.0373
06489-4	119	0.00407	14667	234	0.00517	14666A	170	0.0305
06489	119	0.00664	14668	234	0.00720	14816	206	0.0120
06490	94	0.0432	14744	243	0.00435	14817-2	206	0.000733
06561	95	0.0386	14818	270	0.00307	06685	204	0.0243
06595-1	122	0.0142	06053	56	0.0433			
06595-3	122	0.0242	06095	83	0.0733	Potato		
06595	122	0.0202	06261	110	0.0169	14677	88	0.0653
06615	98	0.0589	06291	139	0.00793	14821	124	0.0414

Table C-5 (concluded)

Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)
Potato (continued)		
06363	52	0.0393
06413	57	0.0341
06521	89	0.0107
06563	90	0.0191
06597	92	0.0569
06617	93	0.0190
06676	123	0.0157
Radish		
14583	52	0.0592
14609	54	0.0393
14660A	88	0.0460
14661A	88	0.0674
06365	52	0.0611
06411	57	0.0460
06366	90	0.0309
06620	93	0.0361
06686	123	0.0464
Squash		
14003	29	0.148
14020	30	0.0595
14108	58	0.121
14171	61	0.147
14223-1	86	0.0209
14259-1	89	0.0144
14272-1	108	0.0563
14289-2	108	0.00722
14366-2	139	0.00213
14383-1	140	0.0203
14475-1	144	0.0116
14504-1	109	0.0603
14549-1	113	0.0126
14815	92	0.0475
06005-1	29	0.0936
06049	56	0.111
06084	58	0.116
Squash (continued)		
06093-1	83	0.0638
06288-1	139	0.0480
Tomato		
14008	29	0.257
14024	30	0.0718
14064	31	0.345
14110	58	0.0782
14280	108	0.230
14389	76	0.0965
14478	80	0.0426
14830	92	0.0721
06012	29	0.548
06051	56	0.214
06687	91	0.0533

Table C-6

SUMMARY OF BACKGROUND OR C^{o}_{PNR} VALUES FOR CEREAL GRAINS

Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)	Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)
	Barley			Oat (continued)	
14058	32	0.0382	14486-2	145	0.0127
14117	59	0.0695	14498-2	174	0.00746
14167	62	0.0104	14556-2	178	0.00774
14222-2	87	0.0390	14589	18	0.0308
14272	91	0.110	14826	90	0.0374
14285-2	109	0.152	06009	30	0.0321
14381-1,3	141	0.248	06101-2	84	0.0132
14381-2	141	0.164	06104	84	0.0385
14381	141	0.183	06197-2	107	0.00877
14829	91	0.00748	06205	107	0.0617
06011	30	0.0259	06285-2	138	0.0122
06102-2	84	0.0745	06309-2	143	0.00800
06105	84	0.0752	06571	58	0.0221
06199-2	107	0.113	06624	61	0.0308
06200	107	0.118			
06207	107	0.146		Rye	
06206-2	107	0.0793	14010	30	0.218
06415	25	0.0383	14026	31	0.0341
06572	58	0.0317	14057	32	0.118
06625	61	0.0214	14114	59	0.149
06690	91	0.0251	14169	62	0.0710
			14255-2	90	0.0430
	Oat		14258	90	0.0413
14059	32	0.0602	14288-1,3	109	0.0234
14116	59	0.0305	14288-2	109	0.0436
14168	62	0.0248	14288	109	0.0289
14220-1,3	87	0.0340	14379-1,3	141	0.00966
14220-2	87	0.00680	14379-2	141	0.0600
14220	87	0.0277	14379	141	0.0120
14271	91	0.0413	14483	145	0.0246
14283-2	109	0.0148	14500-2	174	0.0300
14378-1,3	141	0.0686	14558-2	178	0.0374
14378-2	141	0.0172	14559	178	0.0145
14578	141	0.0551	14578	199	0.00696
14482	145	0.0646	14579-2	199	0.0257

Table C-6 (concluded)

Sample Number	Age (days)	C^{o}_{PNR} (gm/gm)
Rye (continued)		
14652-2	206	0.0418
14653	206	0.00956
14674	235	0.00982
14676-2	235	0.00963
06010	30	0.0522
06106-1	84	0.147
06202-1,3	107	0.0238
06202-2	107	0.0985
06202	107	0.0386
06209-1,3	107	0.0292
06209-2	107	0.106
06209	107	0.0444
06305	143	0.0113
06308-2	143	0.0271
06328-2	173	0.0438
06329	173	0.0216
06345	176	0.0132
06359-2	197	0.0416
06360	197	0.0150
06414-2	202	0.0424
06436	203	0.0147
06478	233	0.0136
06488-2	233	0.0266
06633-2	238	0.0255
Wheat		
14009	30	0.117
14025	31	0.0352
14055	32	0.0606
14056	32	0.0765
14115	59	0.0219
14170	62	0.0260
14218-1,3	87	0.0308
14218-2	87	0.0834
14218	87	0.0392
14270	91	0.0394
14281-2	109	0.0993
14282	109	0.0750
14375-1,3	141	0.0910
14375-2	141	0.110
14375	141	0.0958
14480	145	0.0889
14499-2	174	0.0491
14557-2	178	0.0697
14681	55	0.00982
14686	55	0.00986
14749	64	0.00472
14750-2	64	0.00872
14810	89	0.00450
14811-2	89	0.00688
14827-2	91	0.00664
14828	91	0.00430
06008	30	0.0437
06083	59	0.0414
06100-2	84	0.0498
06103	84	0.0350
06203-2	107	0.0956
06204	107	0.102
06284-2	138	0.0879
06306-2	143	0.0972
06326-2	173	0.0550
06570	57	0.00868
06623	60	0.0118
06668-2	89	0.0142
06669	89	0.0113
06691-2	90	0.0144
06692	90	0.00967

Table C-7

SUMMARY OF BACKGROUND OR C^{o}_{PNR} VALUES FOR TREE LEAVES, NEEDLES, AND TWIGS

Sample Number	C^{o}_{PNR} (gm/gm)
Avocado	
14509-1	0.00719
14510-1	0.00434
14643-1,3	0.0158
14644-1,3	0.00827
14831-1,3	0.00630
14832-1,3	0.0104
Camphor	
06330-1	0.0104
06331-1	0.0169
06416-1,3	0.0297
06417-1,3	0.0184
06432-1,3	0.0120
06433-1,3	0.0119
06434-1,3	0.0185
Grapefruit	
16020-1	0.0108
16021-1	0.00594
16022-1	0.00607
16030-1	0.00441
16031-1	0.00714
16032-1	0.00498
Juniper	
16023	0.00344
16024	0.00665
16025	0.00644
16026	0.00766
16034	0.00580
Laurel	
15013-1	0.0240
15014-1	0.0246
15015-1	0.0351
15037-1	0.0263
15095-1	0.0299
15097-1	0.0219
15108-1	0.0246
15109-1	0.0180
15110-1	0.0179
15111-1	0.0238
Pine - 1	
13501-1,3	0.00441
Pine - 2	
16001-1,3	0.0164
16002-1,3	0.00816
16003-1,3	0.00615
16015-1,3	0.00395
16016-1,3	0.00472
16018-1,3	0.000356
16019-1,3	0.00185

Table C-8

SUMMARY OF COMPUTED GRAIN CROP YIELDS

Crop	Planting Density (stalks/sq ft)	Specific Yield (gms/stalk)	Yield[a] (bushels/acre)
		Plot No. 1	
Barley-1	30.1 ± 2.5	0.553 ± 0.076	33 ± 7
Oat-1	26.8 ± 3.8	0.645 ± 0.006	52 ± 8
Wheat-1	37.2 ± 1.8	0.189 ± 0.016	11 ± 1
Wheat-2	24.6 ± 1.3	0.736 ± 0.162	29 ± 8
		Plot No. 2	
Barley-1	29.2 ± 1.8	0.446 ± 0.028	26 ± 3
Oat-1	21.9 ± 1.1	0.710 ± 0.030	47 ± 4
Wheat-1	33.9 ± 0.9	0.247 ± 0.039	13 ± 2
Wheat-2	22.9 ± 2.3	0.922 ± 0.207	34 ± 10

a Computations based on: 48 pounds/bushel for barley, 32 pounds/bushel for oats, and 60 pounds/bushel for wheat

Appendix D

EXCERPTS FROM TRIP ITINERARY AND GENERAL OBSERVATIONS
JUNE 14, 1964 THROUGH FEBRUARY 23, 1965

June 14

We arrived at El Coco Airport shortly after 1:00 p.m. and were met by Mr. Roberto Alfaro (US/AID employee who assisted in making all the arrangements for the land plots and provided valuable assistance in setting up the project). He drove us to our hotel and gave us the keys of a Jeep station wagon belonging to the Costa Rican Ministry of Agriculture that he had arranged for our use.

After checking into the hotel and changing to work clothing, we drove out to visit the two plots of land. We first visited Plot No. 1 (near Ipís). We found the grains well started, with growths of about 6 to 12 inches in height. The corn was about 4 to 6 inches high, as were the beans and squash. The tomatoes and cabbage were 2 to 3 inches in height and were much too thickly planted. (We later had our farmers thin them out, but still at about half the normal distance between plants because we planned to thin them further during the course of our monthly sampling schedule.) The lettuce and peppers were still very small, not large enough for sampling. The onion plants were about 2 inches tall. The lettuce appeared to be doing very poorly. It was evident that fairly heavy deposits of ceniza-arena had been received; however, during the two weeks before our visit, very little ceniza-arena deposit was reported to have occurred in San José and its vicinity.

At Plot No. 2, the grains were approximately the same as at the first plot. All the other plants, except for the lettuce, were about an inch shorter. The lettuce at Plot No. 2 appeared to be healthier but was still smaller than expected for one-month-old plants.

The amounts of ceniza-arena and rainfall received at the two locations up to the time of our visit were measured by the Meterological Service Institute of Costa Rica (under the direction of Don Elliott Coen). Although the data are incomplete, they indicate that Plot No. 2 received a somewhat higher deposit of ceniza-arena than did Plot No. 1.

On the way back to the hotel in San José we stopped at the Meteorological Service Institute (MI) where we had left much of our equipment upon completion of the first phase of the project. We located and separated most of the field equipment that we planned to use before returning to the hotel.

June 15

Heavy intermittent rain fell in San José from about 0300 to 0800. Early in the morning we loaded our vehicle with the modified recording dew balance, the recording anemometer equipment, the recording hygrothermograph, trays, bottles of water, sprayer, posts, stakes, umbrellas, raincoats, tools, nails, cameras, marking stickers, and notebooks and departed for Plot No. 1 at 0830.

Ceniza-arena was falling during the drive out through Guadalupe all the way to Ipís. We arrived on station at 0900 and immediately put out a collector for a personnel contamination experiment. The particle cloud obscured the sun, giving the appearance of an overcast. However, after about 1000, the cloud shifted south and the sun came through clearly. At about this time, the ceniza-arena ceased arriving, so we washed plants and took background samples.

We noted that the ceniza-arena particles tended to "grow" up along the stems of the tomatoes and small onion plants, making the stem appear to be about three times its normal thickness, to a height of two or three inches above the ground (see Figures D-1 and D-2). Apparently, this stacking of the particles resulted, to a large degree, from splashing during the heavy rains. The splashing also coated the underside of the leaves of all the vegetable crops, especially the lower leaves on the bean plants and on all the squash plant leaves. The leaves on the cabbage and tomato plants appeared to have rust spots on their top surfaces. The small tomato plants also appeared to be affected by a burned condition on some leaves. Many leaves on the small tender corn plants were ripped by heavy winds, and quite a few had what appeared to be spots of rotting cell tissue; the funnel-shaped center on all the corn plants contained ceniza-arena particles. Some photos were taken of these observations (see Figures D-1, D-2, and D-3).

Most of the plants that were washed (for washing, we selected short sections of a row or four to five hills of vegetable plants and small areas up to 3 feet in diameter in each cereal grain stand) were dry by about 1045 when the ceniza-arena began falling again. At 1145, we took a set of primary samples. At 1156, we picked up the collecting tray corresponding with the depositions on our hair, ears, and eyeglasses

Figure D-1
TOMATO STEM CONTAMINATION

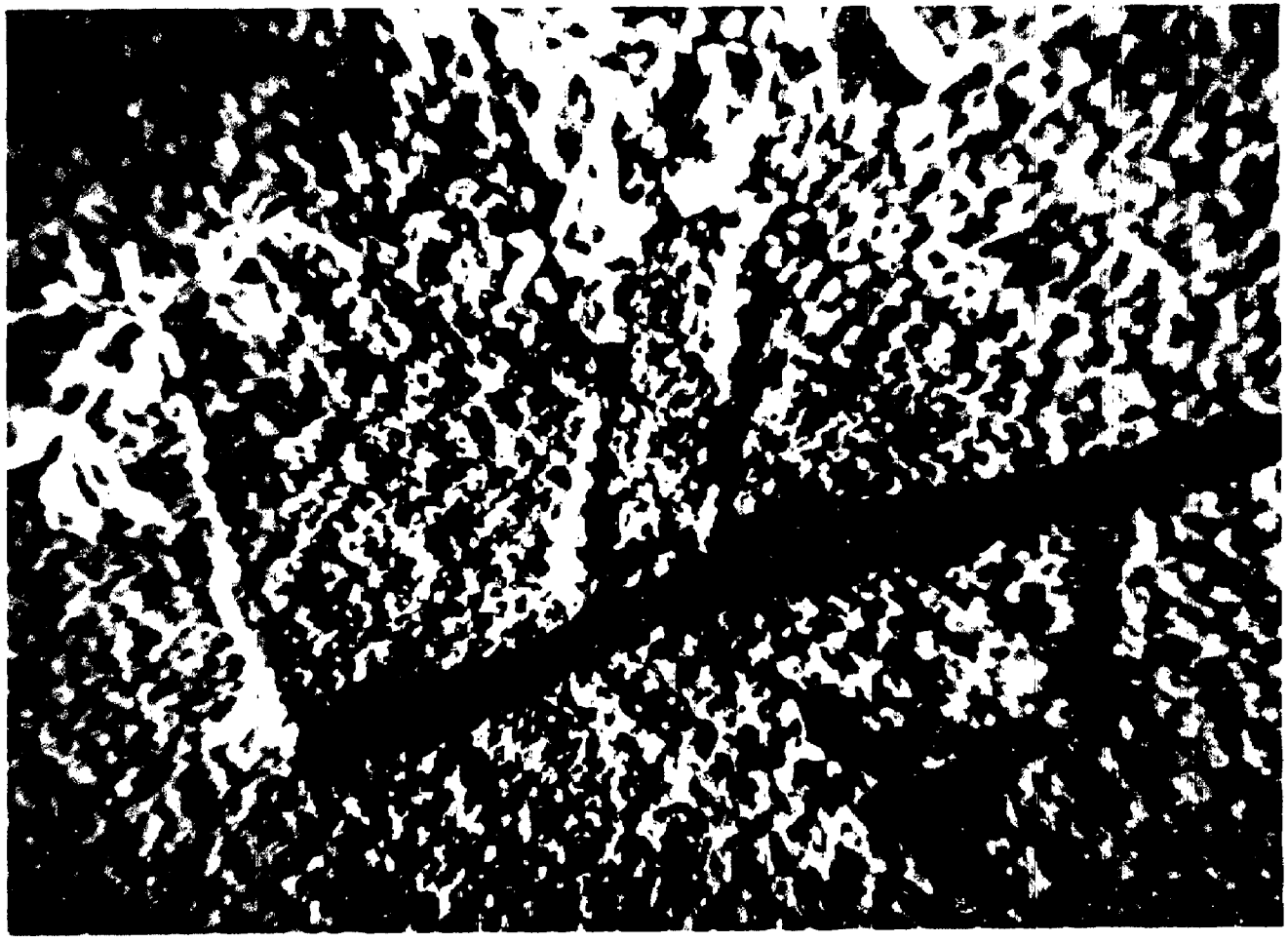
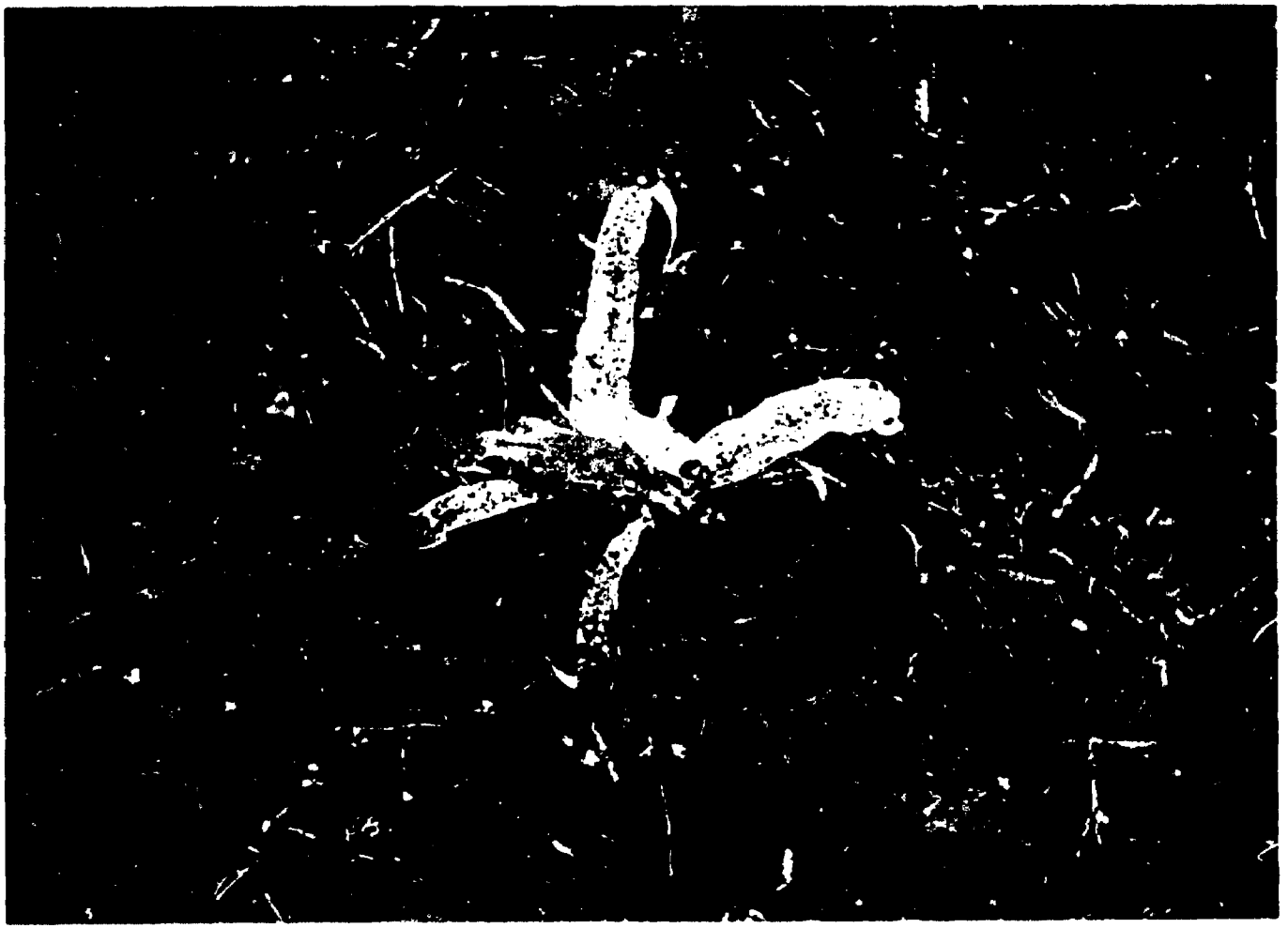


Figure D-2
ONION STEM CONTAMINATION

Figure D-3
SMALL CONTAMINATED CORN PLANT



during the two-hour work period, stepped into the closed car, and drove back to the MI where we spray-washed inside our ears and our hair and collected the particles. Later, we dry-brushed particles from our hair into the hotel washbasin, collected the removed particles, and, after lunch, took these back to the MI for processing and weighing.

At 1400 hours, we packed another set of equipment into our borrowed vehicle and drove out to Plot No. 2. We set up the equipment and washed plant specimens of squash, beans, corn, barley, rye, oats, and wheat. We took background samples of each and waited. No ceniza-arena arrived. We left for San José at 1730.

After dinner, we returned to the MI and processed some of the samples.

June 16

After lunch, some samples were processed, and a few administrative-financial matters were taken care of at the U.S. Embassy and the Ministry of Agriculture. We later went to Plot No. 2, but it started to rain immediately after our arrival. We then went back to Plot No. 1, arriving at 1720. Both rain and ceniza-arena were falling. About 1740, the rain slacked off; 1.1 inches had fallen within the hour. We watched the rain wash the bulk of the particles from the young grain leaves. The top side of the squash plant leaves with the rougher surfaces were rather poorly cleaned; the lower leaves drooped with their undersides heavily weighted with splashed-up particles. The bean and, to some degree, the corn leaves were also spattered with particles on the bottom side; those nearest the ground were spattered on both sides and were hanging almost vertically from the weight of the particles. After the shower, the corn and bean plants were cleaner than the squash plants, but neither was as well cleaned as the grain plants.

We took samples of the rain-washed plants for comparison with the samples that we had taken during the morning sampling period. We left Plot No. 1 at about 1800 and returned to the MI to process samples for several hours.

June 17

We arrived at Plot No. 1 at 0740 after some delay in making up our paraffin melts. Little or no ceniza-arena was falling at the time, so we washed another set of plants and took background samples. Strong gusty surface winds came up, blowing the particles from trees and shrubs around the area. The atmosphere was hazy with the dust particles.

No ceniza-arena fell up to about 0900 when we left for Plot No. 2. On arrival there, we exchanged the collector trays; ceniza-arena had deposited at 0300, but the sample specimens were spoiled by subsequent heavy rains. New plants were washed and backgrounds taken. At 1030, we returned to Plot No. 1.

At Plot No. 1, a fairly small deposit of ceniza-arena arrived steadily from about 1100 to 1230. We collected a set of primary samples (including wax-set clumps of the grain plants) and left for San José at 1300 hours just as a light rain began to fall.

After lunch, we traveled to Plot No. 2 with a new supply of melted paraffin. No ceniza-arena had been deposited nor was any coming down when we arrived. We gave our farmer illustrated instructions for thinning the cabbage and tomato plants and took a few pictures of the plot. We noted the presence of rust spots on the bean and cabbage plants and leaf miner traces on the bean leaves.

We returned to Plot No. 1 at about 1600 hours; the rain arrived a minute later and continued for an hour. We measured 1.1 inches. Some clear sky appeared after the rain stopped, so we exposed new collectors and washed a new set of plants. We left at about 1800 and returned to San José and the MI.

After dinner, more samples were processed. Heavy fallout of ceniza-arena occurred in San José starting about 2200.

June 18

On this day, Volcán Irazú rumbled and exploded from morning to nightfall. The intensity of the volcanic activity surpassed any of our previous experiences in observing the volcano in action. The particle clouds, during the early morning hours, obscured the direct sun almost completely except around the edge of the cloud. White objects, such as a white house or a white dress, were strikingly accented in the dark environmental background. The noise from Irazú was heard at both plots all during the day.

We visited Plot No. 2 at 0500 hours; a medium-to-heavy deposit of ceniza-arena was found on the area. It had fallen mostly between 2200 and 2400 hours the previous night but was undisturbed by wind or rain. The relative humidity was still 100 percent. We took primary samples. The extremely dark particle cloud (almost black in the early morning light) appeared to be drifting west and to the north of the plot. Few natural clouds were in the sky at the time. After we took a set of samples, a slight wind began blowing across the plot from the northwest.

We left Plot No. 2 and arrived at Plot No. 1 at 0645. A dark cloud was overhead, but no ceniza-arena was falling (and no rain had fallen since we left the station the previous evening), so we quickly took primary samples, washed a new set of plant specimens, and exchanged the gross collecting trays. This was accomplished within 20 minutes, and at 0710, a heavy deposition of ceniza-arena began. We left station to purchase a cup of sweetened coffee at a roadside pub.

On the way back to the plot we had to operate the windshield wipers continuously to see our way along the road. The stem and cloud from the volcano were the largest we had ever seen, and the rumbling noise was continuous. Shortly after 0900 hours, the deposition rate decreased to a very light fallout coming in from the west and northwest. The wind was fairly light during the period, so we took a set of single and a set of double primary samples.

We left Plot No. 1 at about 1000 and returned to Plot No. 2. No further deposit was in evidence at Plot No. 2, so we carried our 40 samples back to the MI in San José. By this time, the city was enveloped in a dust cloud that restricted visibility to four or five blocks. The wind had picked up. We took a few photos of the situation.

After lunch, a visit to Plot No. 2 was made at about 1400 hours, and weathering samples were taken. No rain had fallen, but fairly strong winds had been blowing across the plot since shortly after midday. We revisited the plot at about 1730 hours, following a light rain of about 0.15 inch in about 0.5 hour. We took rain-weathered samples for this situation and returned them to the MI at 1800 hours.

After dinner, we processed samples until 2200 hours and decided to close down our collecting activities and complete our analytical work prior to our return to the United States on June 22. The eruptive activity of Irazú was an awesome spectacle this day. We later learned that a rock about the size of a Volkswagen from one of the three vents in the crater crashed through the guard shelter which is located more than a half a mile from the crater lip. Except for a very light deposit of ceniza-arena during the early evening hours, the city of San José was not subjected to the day's output of ceniza-arena from Irazú.

June 19

In the morning, we picked up an entomologist from the Costa Rican Ministry of Agriculture and took him to Plot No. 1 to check the area and plants for the presence of various insects. Only a small amount of

ceniza-arena had been deposited. We recovered the deposit sample in the rain gauge. The final two trays at Plot No. 2 were picked up before returning to the MI. We processed samples all afternoon and evening.

June 22-24

During this period, we worked on data, obtained insect sprays for our farmers, took soil samples, set out long-term collecting trays at each plot, and returned to the United States.

July 13

We loaded the jeep with equipment and left the MI in San José at 0730 and arrived at Plot No. 1 at 0800. The sky was almost clear with a few natural clouds. On the way to the station and for perhaps another 30 minutes after we arrived, we could observe single cloud pulses being ejected from the volcano. These moved, almost as single column-shaped clouds with one following the other, to the north-northwest from the volcano. The cloud heights appeared to increase as they moved away from the mountain peak (perhaps because they were coming somewhat toward our location). After about 0830, natural light clouds obscured the view of the volcano-produced clouds, but the sun shone intermittently until after 1000.

We found the cereal grains (barley, oats, rye, and wheat) to be in a good state of growth; however, the color of the wheat blades was somewhat more yellow-tinged than a month ago. The oats were tallest; the rye was the shortest and heavily matted over the ground. The squash had suffered quite severely from insect attack, but some plants were in bloom. The beans were in fairly good condition; most plants were bearing fruit at maturity for harvest. Many tomato plants had died; the older leaves tend to be burned, and many had withered and collapsed along the stem. The lower withered leaves were in a state of decay and seemed to serve as a sticky collector of ceniza-arena particles. This mass of decaying leaves and ceniza-arena particles around the main plant stem formed a column up to 3 inches (on the larger plants) above the ground, as was noted previously. This material was easily washed off with a high-pressure spray of water.

With some exceptions, the corn plants had not grown very much since the last visit. The leaves had a burned appearance (somewhat spotty). The lettuce, carrot, and beet plants had disappeared. The celery seed had not yet sprouted. Most of the cabbage plants were growing fairly well, but the leaves showed evidence of insect attack; many of the plants were beginning to form heads.

We set up the station equipment (hygrothermograph, converted recording dew balance, recording anemometer, tray collectors, and the plate-collector without the plates in place) and took photographs of the above described conditions of individual plant specimens. No ceniza-arena was being deposited during this time. The cloud appeared to be traveling quite far to the north of the station. At 1000, we went to Plot No. 2, arriving at 1030.

By the time we reached Plot No. 2, the sky was fully overcast. We set up the station equipment and left for San José at 1200. Light rain began falling on the way into the city.

After lunch, we prepared the cereal grain samplers (i.e., the paraffin retaining bands with rolled plastic bags) and greased the plates for the plate sampler. We returned to Plot No. 2, arriving at about 1630 hours. It rained heavily on the way and was raining fairly steadily at the plot. At about 1800 hours, the rainfall rate decreased, so we set out the paraffin ring samplers in the cereal grains and took background samples. Upon returning to the MI, we began processing these samples. The cereal grain plants were quite large. Their average stem lengths were: barley--20 inches; oats--29 inches; rye--10 inches; and wheat--22 inches. The leaves (or blades) had to be stripped from the stems to remove all of the residual ceniza-arena particles.

The general condition of most of the plants on Plot No. 2 was better than on Plot No. 1. The squash plants, for example, were larger and more vigorous than those on Plot No. 1; on the previous visit, they had been smaller. The appearance and height of the grains were about the same on both plots. The corn plants on Plot No. 2 were now larger than those on Plot No. 1. The lettuce, although still retarded, had not died. The beans and cabbage were still at an earlier growth stage than the plants on Plot No. 1; the beans appeared to be retarded, and some of the lower leaves had collapsed against the stem and were rotting in the ceniza-arena and soil packed around the stem (See Figure D-4). All the tomato plants (as thinned) were still growing but not vigorously. The onion plants were larger than on Plot No. 1, and many celery seeds had sprouted. The carrots and beets were also growing fairly well. The cool weather, damp conditions, and lack of extended periods of direct sunlight during the day probably account for the slow growth rates of most of the plants more than can be attributed to effects from the ceniza-arena deposits. Of all the plants grown, the small tomato plants appear to be most sensitive to the slightly acidic ceniza-arena particles. The tomato plant leaves under a prolonged (several days) deposit become brittle with the surface burns and then, with the rain, start to decay and collapse along the stems.

Figure D-4
BEAN STEM CONTAMINATION AND LEAF ROT

July 14

We arrived at Plot No. 1 shortly after 0700 hours. No ceniza-arena was falling, and essentially none had been deposited during the previous night. The sky was clear except for the clouds from several eruptions of Irazú; these clouds were traveling to the north of Plot No. 1. About 2.8 inches of rain had fallen on the area since about noon of the 13th. We washed a series of specimen plants of squash, beans, tomatoes, cabbage, corn, and the four cereal grains and took background samples. The greased plates for the plate sampler were attached and mounted in place for sampling. We took a series of wind speed measurements at the height of the wheat plants in the central area of the plot and over the bean plants (for comparison with the recording anemometer at a height of about 8 feet). Also, more photographs of plant specimens were taken.

At about 0930, a very light deposit of ceniza-arena occurred, lasting for perhaps as long as 20 minutes. Although the deposit was very light, the particles retained on the greased plate could be clearly seen. At about 1000, we recovered the plates from the plate collector and a ground-surface tray collector. Wind speeds up to 5 mi/hr were recorded in the 30-minute collecting period. Although the wind direction (at a height of 8 feet) generally varied by 20 to 30 degrees, occasional shifts up to about 90 degrees were observed.

At about 1100, we went to Plot No. 2. No ceniza-arena had deposited. We washed plant specimens (same as for Plot No. 1 except that the onion plants were included) and took background samples. We put some slitted plastic sheets under several of the plant specimens to reduce the contamination of the plant leaves by splashing during the rain and otherwise to serve as a collector of particles that fall from the plant leaves when they are taken as specimens for the primary samples after a deposition in the dry condition.

After 1400 hours, we left Plot 2 and returned to the MI. We processed more of the background samples before returning to Plot No. 1 at 1600 hours. On the way, we observed a huge black ceniza-arena cloud penetrating far above the natural cloud cover around the volcano (the sun was shining in the valley). We estimated the cloud height from the eruption to be about three times the normal height above the mountain range. (The cloud height would then be about 15,000 feet, and its altitude would be about 26,000 feet.)

No rain had fallen on Plot No. 1 since morning. Also, no ceniza-arena had been deposited in the collectors. At 1630, the ceniza-arena began arriving. On a white plastic sheet, many particles appeared to arrive as dry agglomerates. Some of the agglomerates disintegrated on

landing. Other particles, on landing, bounced and rolled like perfect spheres. A short length of motion picture film was exposed in an effort to record the phenomena.

The previously washed plant specimens and the depositing ceniza-arena were in a dry condition. The particle shower stopped rather abruptly at 1700 hours. Primary samples were taken of all plant specimens. The unsampled specimens, of the series previously washed, were rewashed with the high-pressure spray in preparation for a possible deposit during the night.

The volcano appeared to be in continuous eruption during the time we were sampling and rewashing the plants. The cloud was spreading laterally to a 40-degree angle and was moving toward both plots. The washing was completed at 1830. It was getting very dark by this time, so we returned to the MI without taking more background samples.

During the short deposition period, the surface winds, as recorded by the anemometer, were calm. However, to estimate the airflow over the area, we used cigarette smoke puffs and measured the time for them to move 10 to 20 feet. Changes in direction of a maximum of 90 degrees were noted during a 15-minute period. The measured drift speeds varied from 0.8 to 1.7 feet per second; the most frequently observed speed during the period was 1.0 feet per second. The measurements were made after the maximum deposit was received, or over the last half of the whole deposition period. The minimum angle of impact of most of the particles, as measured on a box lid under an open roof, was about 56 degrees from the horizontal. From the density of the deposit on the box lid, the maximum angle of impact appeared to be about 80 degrees from the horizontal.

July 16

We spent most of the day processing the samples. The procedures in washing the ceniza-arena particles from the foliage and in drying the plant material were slower than in our previous tests because the plants were now much larger and, in some cases, we took larger samples (several plants).

To clean the cereal grains, each leaf had to be stripped from the stem, since it was found that the particles were lodged in the sheathing around the stem near the base of the leaf.

Late in the afternoon, we went to Plot No. 2 to prepare plant specimens for an overnight exposure. We arrived at the plot shortly after 1600 hours. A light rain was falling at the time, but we managed

to wash three sets of plant specimens. One specimen was taken for background. A slitted sheet of plastic was laid out and staked down underneath the other two sets of specimens (except for the cereal grains). The last of these preparations was carried out in a very heavy rainfall and in the darkness of an early nightfall because of a dense overcast and heavy fog. We completed the preparations at 1800 hours and returned to the MI, where we continued processing samples until 1930 hours.

We later made arrangements for delivery of limestone to the two plots on the 17th; we planned to add this material to some sections of the plots to reduce the acidity of the soil (and to see if any improvement in growth resulted).

July 17

We visited both stations early in the morning, arriving at Plot No. 2 at 0500 and Plot No. 1 at 0540 hours. Very little ceniza-arena had been deposited at the two plots since our last visits. The sky was clear. The volcano was relatively inactive, although a few steam puffs could be seen above the mountain silhouette in front of the rising sun.

At Plot No. 1, we washed a new set of plant specimens and took background samples. At 0800 hours when we left for San José, the volcano was still inactive.

Shortly after 0900, the whole valley quickly became overcast. The volcano must have erupted violently about this time because, during the delivery and unloading of the limestone, ceniza-arena and rain fell heavily at both plots. In San José at noontime, some of the automobiles were forced to stop because the windshield wipers could not remove the wet ceniza-arena as fast as it packed on the windshield.

At 0900, Sr. Dengo and party (from the Ministry of Agriculture and the University of Costa Rica) came to the MI, and we left for Plot No. 2 where we described our work, equipment, and the crops. We returned to the MI shortly before noon. The Costa Rican officials were interested in our work with regard to the possible application of our methods to obtain data on the effect of the ceniza-arena on coffee plants. The dry winter conditions, insect and scale attacks, and the ceniza-arena were all considered to be factors in the reduced coffee crop for the year.

The rain continued throughout most of the afternoon, so we processed more of the collected samples at the MI, working until about 1930 hours.

During several of the morning weathering series, we noted that the ceniza-arena particles on the topmost leaves of the grains dried very rapidly in the morning sun, but that, even at noontime, the bottom leaves (and ground) were still damp. Thus, the bottom leaves probably intercepted and retained some of the particles that fell off the dry upper leaves. However, the wetted particles, even after drying, did not readily roll off the leaves in surface wind gusts up to 10 mi/hr. The oat leaves lost particles most readily; the rye leaves lost very few particles (mainly because of the low matted growing habit of the rye and the slowness of drying of the mat).

July 20

W worked on Plot No. 1 from 0600 to 1230 hours. During this time, the volcano emitted several series of individual particle clouds, but they all drifted slowly to the north of the plot. In the interval, we spread granular limestone over sections of the plot and replanted lettuce, carrots, beets, celery, peppers, and some tomato and squash. On the replanted sections, the limestone was spread along the row and worked into the ground with a hoe. More of the limestone was scattered over the area after seeding. Limestone was broadcast by hand over about one-half of the area of each of the cereal grains. The barley and oats were beginning to head out.

July 21

We arrived at Plot No. 1 at 0730 and proceeded to dismantle the station equipment. A small deposit of ceniza-arena had fallen on the area during the night after the rainfall ceased. We took a set of primary samples of the four grains. We also recovered an exposed plate collector. One large eruption occurred as we left Plot No. 1 at 0845.

From about 0930 until noon, we picked up the field equipment at Plot No. 2, spread limestone over parts of the planted area, and reseeded some of the lettuce, carrots, beets, and celery after hoeing the limestone into the soil. No ceniza-arena had been deposited since yesterday. During part of the time at the station, it rained heavily.

After lunch, we processed samples, recovered the various chart records, and packed samples for shipment to the United States.

August 10

We took the field equipment first to Plot No. 2, arriving at 0845. The sky was only partly covered with clouds, and a very light breeze was blowing over the area. We set up the equipment, washed specimens of the vegetable crops, and took background samples. However, before we had taken all the background samples, a light fall of ceniza-arena began. After about an hour, the deposition ceased. We then took some primary samples and finished the washing of other specimens and took background samples of these plants.

The barley, oats, and wheat were well headed out; the barley was nearest the ripening stage. The rye was still in a matted grass form, with occasional stocks as high as 3 feet, headed out. Photographs of the crop plants were taken.

Some of the corn plants were beginning to show tassels. Fruit had set on the squash. The beans were almost dead or dying, with moldy pods hanging on stems carrying rotted leaves. The cabbage was healthy in appearance, and many plants were forming heads. The beets, onions, carrots, and lettuce plants were now large enough for sampling. The soil was less moist than on the two previous trips, and the warm weather the last two or three days appeared to have been very beneficial to these plants. More tomato plants had died, and those remaining appeared to be stunted.

After lunch we took the field equipment to Plot No. 1, arriving at 1500 after some delays en route due to road repairing operations. We set up the equipment, and, after washing a set of plant specimens, ceniza-arena began falling. It first arrived in the form of mud balls, and then as dry particles. A few, low-hanging clouds were drifting over the area from the direction of Irazú. Otherwise the sky was only partially covered with clouds. After about an hour, a final rapid deposit occurred, again in the form of mud balls. The relative humidity was about 100 percent, but no rain fell.

We took primary samples of the washed plants and then rewashed some of the plants. It was getting dark so we decided to postpone taking background samples. We returned to the MI and processed the collected samples until about 1900 hours.

At Plot No. 1, the barley, rye, and wheat appeared to be at almost the same stage of maturity as the plants at Plot No. 2. The oats appeared to be slightly more advanced. Many of the corn plants had formed tassels, but these plants were all severely stunted. All the vegetables showed less vigorous growth than those at Plot No. 2, except for the cabbage.

The bean plants were dying, but many of the seed pods were approaching the ripening stage. On the last visit, these bean plants were healthy and vigorous.

August 11

We arrived at Plot No. 2 at 0645. A light ceniza-arena fallout was in process at the time. The foliage was still damp with dew, and no rain had fallen during the night. The bulk of the ceniza-arena on the foliage had been deposited between 0100 and 0200 hours. The ceniza-arena fall subsided, and primary samples were taken of all the previously washed plant specimens. We particularly noted a rather large degree of retention by the barley heads.

A light shower of ceniza-arena fell at Plot No. 1 shortly after our arrival at 1000 hours. We exposed the plate collector during this shower.

At about 1230, we took wind-weathering samples of the cereal grain heads. Almost immediately afterward, a fairly heavy shower of ceniza-arena occurred. Several large ceniza-arena clouds had developed following a series of large eruptions that started at about 1215. At 1315, we took a set of primary samples. A fairly strong wind was blowing over the area during the collection periods. A few drops of rain fell during the final few minutes of the shower; most of the deposit, however, fell in a dry condition. Very few of the particles were observed to arrive in an agglomerated form. Most of them rolled off a cardboard sheet when it was tilted to an angle of about 45 degrees to the horizontal.

August 12

We had planned to process samples in the MI most of the day, but when we left the hotel, a huge black ceniza-arena cloud was observed in the sky on a direct line between San José and Irazú. We therefore gathered a few remaining clean sample containers in the MI and went to Plot No. 2, arriving at 0630. Ceniza-arena was deposited on the windshield as we drove out but had virtually ceased falling when we arrived on station.

A heavy deposit of the black ceniza-arena covered the damp foliage. No rain had fallen during the night. The dew balance record indicated that the initial deposit had occurred at about 0400. We took primary samples of all prepared plant species and washed a new set of specimens. The sun was shining most of the time, so a series of photographs were taken for illustration. Particles were observed on the barley and rye*

* A few scattered stalks of rye were growing out of the mat of rye foliage that covered the ground.

beards, as well as between the kernels of the grain. Particles were also observed on the oat husks around the kernels and along the stem brackets holding the developing heads. On the wheat heads, particles were observed between the seed husks and even on the exterior sides of the husks. The cup-shaped cabbage leaves were loaded with particles (see Figure D-5).

We left Plot No. 2 shortly before 0900 and returned to San José. After breakfast, we processed samples for several hours. At 1300, we returned to Plot No. 2 and took a set of wind-weathering samples. Shortly before 1400 hours, we returned to the MI with the samples and continued the processing of previously collected samples. Just as we returned to San José, a heavy downpour of rain began. The rain, falling at a rate of about 2.5 inches per hour, cleaned most of the ceniza-arena (which had fallen during the previous night) from the streets and roofs.

This apparent renewal of the seasonal rainfall pattern suggested that rain-weathering samples could be obtained from Plot No. 2. However, on returning to Plot No. 2 at 1640 hours, no evidence of rainfall existed. Instead, a dense fallout of large mud balls precipitated at 1700 hours. After a short time, the arriving particles were fairly dry, and most of them appeared to be in the form of agglomerated particles in the 1- to 2-millimeter size-range. After about 30 minutes, the particle shower ceased, and we took a small set of primary samples. Shortly afterward, a light rain of very wet ceniza-arena particles began arriving, i.e., raindrops that contained a few ceniza-arena particles.

Darkness was setting in rapidly. We returned to the MI and continued processing samples until about 2000 hours.

August 15

Volcán Irazú was pumping out particle clouds quite regularly in the morning. We arrived at Plot No. 1 at 0630; from this location, the clouds could be seen shearing off to the north not far from the volcano. With the sun backlighting the clouds, particle streamers could be clearly observed as the clouds met the southerly crosswind. Some particles, however (probably from the higher altitudes), carried to the location of the plot, and we observed an arrival of particles at 0655.

By this time, we had washed a set of plant specimens. We exposed the plate collector. The fallout was light but fairly steady, and the surface wind speeds varied from almost zero to about 1 ft/sec. (Occasionally, cigarette smoke puffs hung in the air after rising before being dispersed.) After about 20 minutes, the plates had a uniform covering of fairly small particles. We recovered the samples and exposed a second set of plates.

Figure D-5
CABBAGE LEAF CONTAMINATION

During the second exposure, the wind picked up some and became more variable in both speed and direction during the exposure. About half the time, the wind came from the north, and much of the rest of the time it came from the southwest. The exposure lasted about 30 minutes giving about the same observed particle density on the plates as on the previous day.

The winds picked up in speed after the second exposure, and the fallout also ceased shortly afterward. We then sampled a large squash plant, taking separately the eight largest of its ten leaves and one fruit. We had previously photographed the plant, so that the leaf areas and orientations could be determined.

We left the plot at 1100 and returned to the MI and continued processing samples until 1900 hours. Up to this time, we had collected 182 samples associated with the contamination of the plant specimens and 46 samples from the plate collector assembly.

September 2

The sky was generally clear in the morning, and small cloud puffs could be seen rising above Volcán Irazú. They were moving slowly to the north-northwest. We loaded the field equipment in the jeep and proceeded to Plot No. 1, arriving at 1620. A very light deposit of ceniza-arena was on the foliage. We set up the field equipment, washed a set of plant specimens, and took background samples.

The amounts of ceniza-arena in the post collector, exposed since our last visit, was quite small. The plot apparently had received only light deposits of material over the past two weeks.

The barley and oats were very near the ripening stage, and, surprisingly, the barley grains (or heads) were not mildewed or moldy as might be expected from the persistent damp conditions. The wheat heads were also well developed. The rye, while still mostly in a grassy condition, was growing many stalks with the heads in full flower. The corn, in a severely stunted condition, was forming tassels and ears. The cabbage plants had formed 2- to 4-inch-diameter heads and, except for holes in the leaves due to insect attack, were growing vigorously. The squash plants had formed more fruit. The onions were now large enough for sampling. New bean plants, planted on the last trip, were growing a second pair of leaves.

After taking background samples, we returned to San José where we loaded the second set of field equipment and transported it to Plot No. 2.

We arrived at Plot No. 2 at about 1030, set up the equipment, and began to wash a set of plant specimens. Before we finished, a heavy rainfall began. We managed, during lulls in the downpour, to take a set of rain-washed background samples of the grain heads and stalks, as well as a set of spray-washed samples of the grains.

At Plot No. 2, the barley was in a slightly more advanced stage of ripening than at Plot No. 1. The oats were taller, but the grain was not quite as near the ripening stage as that at Plot No. 1. The wheat and rye appeared to be at the same stage of growth as at Plot No. 1. Here, as at Plot No. 1, the corn was severely stunted and growing poorly. The lettuce had not grown much since the last visit. The carrots and beets had grown considerably larger. The carrot leaf tips had a burned appearance similar to that noticed earlier on the tomato leaves. The newly-planted beans were not growing as vigorously as those at Plot No. 1. The heads on the cabbage plants were not as well developed as those at Plot No. 1. Many of the small tomato plants, present at the last visit, had disappeared. A few of the seedling pepper plants had grown their second and third set of leaves, and the celery seedlings were visible in the row. The squash leaves were badly mildewed on the bottom side and were heavily splattered with ceniza-arena and soil particles; most plants had one to half a dozen small fruit on the vines.

We finished taking the background samples at about 1330, returned to the MI, and processed samples until 1700. We then returned to Plot No. 1. About 1.3 inches of rain had fallen on the area during the afternoon, but only a very light rain was falling as we arrived. The rain stopped after a few minutes (except for sporadic sprinklings). We re-washed all of the vegetable plants, and, by the time we finished, the stars were shining through the thinning night clouds. We could see the dark shadow of a ceniza-arena cloud forming over Irazú. A light sprinkling of ceniza-arena occurred at 1900 hours, and we exposed the plate collector, but the particle shower did not develop within 30 minutes. We then left for San José, leaving the collector in place for the night.

September 3

Shortly after sunup, the advantage of washing the specimen plants after sunset when the rain ceases was verified. A large diffuse cloud was observed fanning out over the valley in the clear morning sky. We loaded our sampling equipment in the jeep and went to Plot No. 1, arriving at 0600. A heavy ceniza-arena deposit, only slightly damp, covered the foliage. None was falling at the time, and no rain had fallen since we left the area the previous evening. The plate collectors were heavily loaded, especially the horizontal and near-horizontal plates. According

to the dew balance record, some ceniza-arena had been deposited all during the night, but most of it fell between 0100 and 0400.

We took primary samples of all prepared plant specimens and recovered the plate collector. More ceniza-arena began arriving at 0650. We exposed another set of plate collectors for 10 minutes. The wind was nearly calm, with an average speed of under 2 feet per second for the exposure period.

The intensity of the ceniza-arena shower gradually decreased, and very light variable winds blew over the plot as the vegetation dried off. We took wind-weathering samples of the grain heads at intervals during the morning and of other plants near noontime after the wind had picked up enough to make small dust clouds from the ceniza-arena deposits on nearby trees and on the grain tops.

Shortly after we took the last set of samples, about 0.01 inch of rain fell. This amount of rain partially cleaned some of the vegetable leaves, which were inclined at angles of about 45 degrees and facing directly into the incoming rain drops. On other leaves, the particles tended to accumulate in piles in the leaf veins. The outer portion of the corn leaves lost most of the particles, but this loss appeared to be due predominantly to wind action. The particles dried very rapidly after the light shower, and most of the leaf-surface deposits were dry within half an hour. On the more vertical cabbage leaves, particles were observed to slide off the leaves as they dried without assistance from wind-induced leaf vibrations.

Within an hour after the light rain shower, we took another set of wind-weathering samples of all plant specimens. After this set of samples, we left the plot and started back to the MI with the samples. However, we encountered a rain shower as we proceeded up the road no farther than a half-mile from the plot, so we returned. Some time during the 4- to 5-minute period since we had left the plot, 0.07 inch of rain had fallen. The unprotected vegetable plants were heavily splattered with soil; also, the rain contained some ceniza-arena particles. We had protected some of the specimen plants by spreading a large (slit) plastic sheet on the ground around them. We took these plants and samples of the grain heads as rain-weathered samples. This set of samples exhausted our sample containers of all kinds, including plastic bags, so at about 1400 we returned to the MI.

At the MI, we processed samples until about 1730 and then went to Plot No. 2, where we washed a set of plant specimens. About 1.3 inches of rain had fallen on the area since noon of the previous day. No rain was falling, but the fog was very dense. We took some additional back-

ground samples after the washing and left the area at 1900 hours. Just as we drove away, damp ceniza-arena particles began falling. They were first noticed in the car headlight beams and then on the windshield. These particles, not readily removed from the windshield with the wipers, were observed falling on the road all the way back to San José.

September 6

Most of the time from 0830 to 1800 was spent in processing samples. One member of the team drove out to Plot No. 2 at 1400 hours, washed a few selected vegetable plants, and took additional background samples. It did not rain at Plot No. 2 during the day up to 1600 hours, and no rain fell in San José.

In processing the samples, we noted that no ceniza-arena particles penetrated into the central portions of the cabbage heads nor were any found inside the small corn husks near the kernels. The outer cabbage leaves and the leaves around the head collected and retained a large amount of particles. Although the cabbage leaves, because of their smooth surface, were easily cleaned, they still retained the particles in the field because of the saucer shape of the outer leaves.

On the corn plants, many particles were found lodged between the corn stalk and the outer husk around the ear. The tassel retained a fairly large number of particles, and the well at the joint of the stalk and leaves served as an efficient particle collector. As previously mentioned, the corn at both plots appeared to be stunted. The older leaves had a burned appearance and were gray in color; on the newer leaves, the gray portions were elongated streaks running along the length of the leaf.

October 3

Volcán Irazú was inactive in the early morning; at 0600 the sky was clear. After breakfast we went to the MI to assemble the field equipment. Mr. Robert Alfaro arrived at 0830, delivering a station wagon from the Costa Rican Ministry of Agriculture. We loaded the field equipment and arrived at Plot No. 1 at 0900. The instruments were installed and started as usual.

The post tray, which had been exposed from September 9 to October 3, contained a very small deposit of ceniza-arena. Most of the wheat heads were ripe. The oats were past the ripened stage, and some of the grain had shelled out onto the ground. The barley was past ripe, with many

stalks broken and the heads, or ears, hanging down. Some of the mature barley grain had sprouted in the head, and little green shoots were emerging from the ceniza-arena-laden heads. Rye stalks were standing in much greater abundance than they had during our last trip; none of the heads, however, were found to contain fully developed seeds. The cabbage was in excellent condition, with many solid heads of good quality. Many new leaves and fruit were in evidence on the squash (zucchini) plants. The onion, beet, and lettuce plants were large enough for sampling, although they were still growing very slowly. The tips of the onion tops were gray-brown. Also, the tips of some of the beet leaves had a burned appearance. The pepper, celery, and carrot plants appeared to be healthy but were still very small. Most of the corn plants were almost dead; the leaves were gray and frayed. The lower parts of the plants were coated with splashed-up soil and ceniza-arena particles. The plants were stunted, and none of the developing ears contained more than a few large seed kernels. Most of the second crop of bean plants appeared to have been killed; the dead leaves were hanging in a rotting condition from the stems. However, a few beans were starting a new growth of leaves from the old stalks. Three or four tomato vines were still growing from stalks laying on the ground that had rerooted.

Samples were taken of the grain heads and corn plants in the as-found condition. We washed plants and left the station at 1210, intending to return in the evening to rewash and take background sampling.

After lunch, we reloaded the station wagon and went to Plot No. 2, arriving at 1335. The day was still warm, with a slight breeze, but rain clouds were forming. We took samples of the rain-washed grain heads.

The grain here was little different than that at Plot No. 1, except the barley appeared to be in a somewhat more advanced stage of decay, and the oats were perhaps a slightly better crop. A dense growth of grass and weeds matted to the ground between the grain stalks at both plots. The cabbage had not yet matured but was again the outstanding crop. Many of the larger squash plants had disappeared; those remaining were stunted. The onion plants were larger than those at Plot No. 1, and, as at Plot No. 1, the tips of the foliage were burned. The beets, lettuce, and carrot plants were also larger than those at Plot No. 1. The pepper and celery plants were beginning to exhibit definite growth beyond the seedling stage. The second bean crop had been killed (as at Plot No. 1), and again a few new leaves were forming on old stems. The leaves on all the corn plants were gray, having a burned appearance, and all the plants were apparently dead. The fincero had planted new seeds, which had formed plants about 3 to 4 inches high. The new plants appeared to be healthy and growing well.

October 6

Light-colored clouds from weak eruptions from Irazú were observed at 0530. We arrived at Plot No. 1 at 0605 and found a small deposit of ceniza-arena in the tray collector. Primary samples of all washed specimen plants were taken. Just as the last samples were taken at 0618, ceniza-arena started arriving. A plate collector was exposed and wind speeds measured with the hand-held anemometer until the deposit slackened at 0651. The wind velocity increased, and secondary weathering samples were taken. A new set of clean plants was prepared by spray-washing at 0845. Ceniza-arena started arriving again at 0935; another set of plate collectors was exposed. A large eruption was observed as we departed at 1005.

After breakfast, we returned to Plot No. 1. When we arrived at 1115, ceniza-arena was falling very slowly. We took more secondary weathered samples of both vegetables and grains, and at 1240 we sampled the plants that were washed at 0845 in the morning.

The deposition ceased at 1300 so a third set of plants was washed and covered with plastic tents. The plastic tents were photographed in place, and we departed at 1430.

We processed samples at the MI and returned to Plot No. 1 at 1745. A light rain was falling, and 0.35 inch had collected in the rain gauge. We took rain-washed samples of grain heads and stalks; the uncovered vegetable plants were ruined for sampling by the splashing rain.

One member of the team recovered the ceniza-arena that collected on his arms during the day's work.

When the rain stopped at 1830, the plastic was removed from the clean plants, and we departed at 1845.

November 6

We loaded the field equipment and arrived at Plot No. 1 at 1000 hours. The sky was clear, and Volcán Irazú was inactive. The recording instruments were installed and started as usual. The post and ground trays, which were exposed from October 12 to November 6, contained very small amounts of ceniza-arena.

The number of rye stalks were now quite numerous and were well headed out, but the heads contained no maturing seeds. Only a few stalks and heads of the wheat and oats remained; these were utilized for back-

ground sampling. The farmer was instructed to start preparing the oat and wheat plots for replanting. The barley plot had been cleared during our absence and was ready for reseeding. Plants of lettuce, beets, carrots, onions, peppers, and squash were available for sampling. The earlier plantings of corn and beans were dead, and the cabbage was too ripe for sampling. Of the newly planted crops (planted during the October sampling period), the corn and peas were 4 to 6 inches high, while the radishes and potatoes were just coming out of the ground.

After taking motion pictures of some of the crops, we went back to the MI and loaded the equipment for Plot No. 2. We arrived there at 1430. The sky was generally overcast, and no volcanic activity had yet been observed. The rye crop here was not quite as good as that at Plot No. 1. The barley plot had been cleared, and the farmer was instructed to start preparing the wheat and oat plots for replanting. The newly-planted corn was from 4 inches to 1 foot high. (Some of the plants were from a planting in September.) The newly-planted peas were about 4 inches high. Some of the previously-planted beans were growing well, and the potatoes and radishes were up but were still too small for sampling. Scattered plants of onions, carrots, and lettuce from the earlier plantings were available for sampling, and three squash plants remained. The cabbage was overripe. The post and ground trays here also showed a very small ceniza-arena deposit for the period of October 12 to November 6. We installed and started the recording equipment.

We arrived back at Plot No. 1 at 1520 and proceeded to prepare plant specimens for sampling. All the vegetation appeared to be clean as a result of the rather heavy rains and very small deposits of ceniza-arena. The grains were sampled without spray-washing; spray-washed background samples of other plants were taken after the protective plastic sheets were in place (See Figure D-6). It started to rain at 1640, so we returned to the laboratory and processed the background samples for several hours.

November 7

A heavy fog blanketed the entire area at 0530. We arrived at Plot No. 1 at 0730 and found no ceniza-arena in the collecting tray. The fog had cleared enough to reveal a white cloud from Irazú moving south, following darker particle clouds that apparently were produced in earlier eruptions. The plastic-covered plants were still very clean, although we had no record of rainfall during the previous afternoon and night.

We selected a nearby avocado tree for leaf sampling. It was perhaps 15 feet high, and its canopy was about 8 feet in diameter (see Figure D-7).

Figure D-6
PLASTIC SHEET SPLASH PROTECTOR

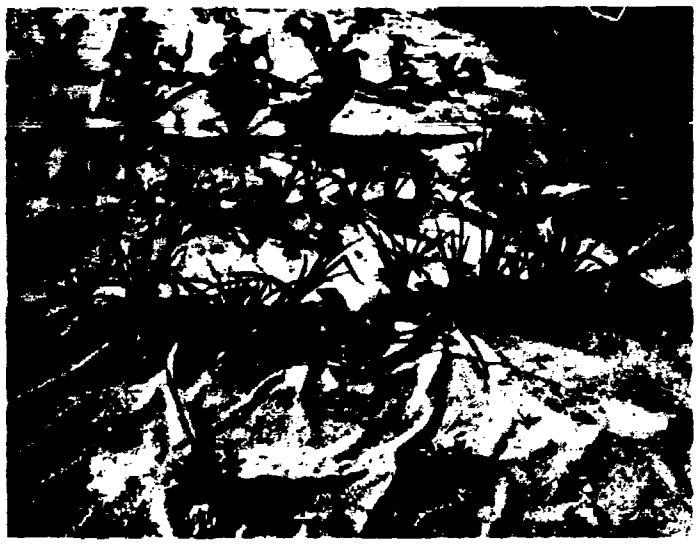


Figure D-7
SAMPLING AVOCADO TREE LEAVES

We took samples of the new and old leaves from the north side of the tree. The new leaves appeared to be quite clean and free of particles (due to rain-washing), while crusty deposits of ceniza-arena covered portions of the older leaves.

We proceeded to Plot No. 2, arriving at 1045. No ceniza-arena had been deposited during the night. Specimen plants of beans, onions, carrots, lettuce, and corn were prepared for sampling, using the plastic as described, and the plants were spray-washed. Background samples were taken of the clean plants, and samples of rain-washed rye, oats, and wheat were also taken. At this location, a camphor tree was selected for sampling. It was about 12 feet high, and the canopy was about 6 feet in diameter. Again, both new and old leaves were sampled separately.

After arranging with the owner for continued rental of the land at Plot No. 2, we returned to the laboratory and processed the samples that we had collected. We also designed and built an instrument to measure the angle of fall of the ceniza-arena particles.

December 1

Irazú was obscured by clouds at 0530 in the morning, and therefore observation of possible volcanic activity was impossible.

We picked up the station wagon, loaded the field equipment at the MI, and went to Plot No. 1, arriving at 0730. We encountered light rain en route, but it was not raining when we arrived. Heavy clouds still obscured Irazú. The rain gauge showed that 1.05 inches had fallen since November 13, and the post collector, also exposed since November 13, appeared to have received a very small deposit of ceniza-arena particles.

The replanted grains were 2 to 3 inches high, the oats being the thickest and largest; the wheat and barley plants were somewhat more sparse and smaller. Many of the oat plants were probably from the shelled-out seed from the previous crop, since considerable unsprouted grain could be seen on top of the ground from the November 11 planting. The rye stalks were now quite thick, but the heads contained only a few seed grains, probably due to poor pollination during the previous month. The original onions, beets, lettuce, carrots, and peppers from earlier plantings were still growing and available for sampling. The onion foliage was up to 1.5 feet high, and, although the tips were brown, the plants appeared to be healthy and growing quite vigorously now that the days were warmer. The beets were 1 foot high, but the leaves were somewhat wilted in the heat of the day. The undersides of the leaves had a heavy infestation of aphis. The carrots were 8 to 10 inches high, and the lettuce was heading out in

large hemispherical clumps with crown heights of up to 6 inches. The pepper plants appeared healthy and were 4 to 6 inches high; some were forming blossoms. The six-week-old corn plants were, on the average, about 1 foot high, but the leaves were split (from wind); the upper new leaves were somewhat wilted and limp and had a yellowish-green color. The three-week-old corn plants were about 3 inches high, and the leaves had normal light green color. The six-week-old pea vines were about 2 feet long and had fallen on the ground. The three-week-old pea plants were all about 4 inches high. The six-week-old radish crop was near maturity and ready for harvest. The new leaves on the plants were green and healthy, but the older leaves were yellow-tinted and showed evidence of insect damage. The three-week-old bean plants were about 4 inches high with their first two leaves. The replanted tomato, cabbage, and squash plants were just showing in the rows from the three-week planting. A few of the potato plants were up to 4 inches high, but about half of the planting had not yet emerged from the ground.

We installed and started the recording instruments. The farmer had applied DDT to all vegetables on the previous day, but many insects were observed, especially in the rye plot. The foliage of many plants showed evidence of small but recent ceniza-arena deposits. Plastic sheets were placed under radishes and beans. After washing clean plants of the vegetables, oats, and rye, background samples of specimen plants were taken. Samples of rye and the leaves of an avocado tree were taken in the original (unwashed) condition.

After lunch, we loaded the second set of instruments and went to Plot No. 2, arriving at about 1300. The weather was warm and sunny at the plot, but Irazú was still not visible because of cloud cover at the mountain. At least 2 inches of rain had fallen since November 13, and only a small deposit of ceniza-arena particles was in the post collector. The instruments were installed and started.

The rye at Plot No. 2 was not quite as fully developed as that at Plot No. 1. Only a few green seed grains were found in the developed heads. A dense scattered undergrowth of weeds had developed throughout the rye patch. The two-week-old wheat, oat, and barley plants were about 2 inches high. A heavy rain just after planting caused some redistribution of the planted seeds and resulted in a nonuniform coverage of the area by the plants. The corn was the most advanced crop; plants varying from 6 inches to 4 feet high were available from two different plantings. The corn had a deep green color, crisp firm leaves, and a vigorous appearance. The pea, bean, and radish plants were at a similar stage of development as those at Plot No. 1. A few of the older bean plants, not in a state of vigorous growth, were still available for sampling.

A few peppers and potato plants were also available for sampling. Some of the bean, radish, and pea plants were also prepared for sampling with plastic sheet splash protectors. The vegetable plants and rye were spray-washed, and background samples were taken. Samples of the rye heads and stalks and the camphor tree leaves were taken in the original (unwashed) condition.

We left at 1615 and processed the background samples in the MI laboratory until 1900.

December 5

At 0530, the volcano was observed to be erupting, with a broad, diffuse ceniza-arena cloud moving slowly toward San José. We arrived at Plot No. 1 shortly after 0630. At this time, the northern edge of the particle cloud appeared to be directly over the plot; the center of the cloud was somewhat south of the plot, mixed with a light overcast of natural clouds. The volcano was no longer erupting. A few particles were found in the collecting tray, and none were arriving. No rain had fallen since our last visit to the station, and a medium dew was on the foliage. We exposed a plate collector and rewashed some of the vegetable plants.

A small eruption occurred at 0745, but the cloud moved to the north, so we proceeded to Plot No. 2, arriving at 0800. Here it was calm. The sky was overcast, and a heavy dew lay on the foliage. A small deposit had occurred during the night or early morning. We took primary samples of all prepared specimen plants and took them back to the MI where we processed samples until almost noon. We went back to Plot No. 2 at 1200 and took wind-weathered samples of the plants. While we were taking samples, a loud rushing noise came from the trees around Zamoras' house (about one-eighth mile to the east). We saw trees hit by a very strong gust of wind, bending them and ripping off leaves. Then the wind hit the east side of the plot, sucking up the post collector tray and carrying it about 30 yards to the north and scattering the louvers over the landscape. Within 30 seconds, it was calm again.

This was the first accidental loss of a collection due to natural causes. The dew balance pan also experienced a reduction in pressure as the cyclone passed over, causing a negative deflection; but the wind was not strong enough to remove the cover. We departed the station shortly before 1300, took lunch, and processed samples in the MI until about 1600.

At 1620, we went to Plot No. 1 to pick up the exposed plate collector and to exchange the tray collector. Heavy clouds were forming, but no

rain was falling when we departed at 1700. We returned to the MI and processed samples until about 1930.

December 12

Irazú was seen to be erupting at 0530 this morning; the dark particle cloud was going to the north.

No suitable trees or potted shrubs could be found in the Cartago area. A small pine tree was purchased in San José, and a leafy bush was chopped down along a creek near Plot No. 1. These were taken to Station 13 above Rancho Redondo and planted firmly in the ground. A plate collector was installed on one of three posts set in the ground near the trees. An anemometer and a device for measuring the angle of particle fall were mounted on the other two posts.

Background samples of the pine needles and bush leaves were taken, and the station was prepared for operation at 1330. In setting up the trees, the 2 inch aluminum discs were fastened with clothespins to the branches of the trees.

December 13

We arrived at Station 13 at 0700. Some ceniza-arena had been deposited during the night. The plate collector and corresponding collecting tray were recovered, and clean collectors were exposed. A ceniza-arena shower started arriving shortly afterward, and, after a 10-minute exposure, a fairly large deposit had accumulated. The second set of plate collectors and tray were picked up.

The procedure of fastening 2-inch greased aluminum discs to the tree branches with clothespins did not prove satisfactory. It was difficult to mount the discs in a horizontal plane, and, for some unknown reason, many of them fell off during the night. The leaves on the broad-leaf bush were already badly wilted. Aside from the difficulties encountered, little difference in the deposits on the various discs at different locations in the small trees could be detected by visual examination. The discs were removed from the trees and placed in the tray but were lost as samples when a strong gust of wind blew the tray over, scattering the discs on the ground.

In a second try with the greased discs, crossed steel curtain rods were utilized for holding the discs. The crosses were mounted in the pine tree with one arm pointing in a north-south direction and the other

pointing east-west. The aluminum discs were then fastened quite easily to the rods in a horizontal plane. One pair of crossed rods was placed in the upper one-third of the tree, and the other pair was located near the bottom branches. A 10-foot by 10-foot plastic sheet was placed under the tree.

Ceniza-arena particles started arriving at 1515, and another plate collector was exposed for 43 minutes. The deposit on the plastic sheet did not show a tree shadow effect on the downwind side of the tree. Rather, the deposit on the downwind side appeared to be somewhat heavier than on the upwind side. But before the discs could be recovered, a heavy rain started falling. We departed at 1630.

December 14

We arrived at Station 13 at 0750. At 0800, ceniza-arena started falling. It stopped after a few minutes. Then, while preparing to recover samples, a cow walked across the plastic sheet and brushed against the pine tree, knocking some of the discs off. The remainder of the discs were recovered, and we left at 0830. The remainder of the day was spent processing samples and packaging the material for shipment to the United States.

January 6

At 0530, a dense, fog-like cloud over the eastern mountain peaks obscured Irazú. A very light deposit of ceniza-arena on the hoods of vehicles in the parking lot indicated that eruptions had taken place during the night.

We loaded the equipment and drove out to Plot No. 1, arriving at 0740. A light misty rain was falling on the drive out and at the plot when we arrived. A very strong gusty surface wind, variable from the north and northeast, was blowing across the plot. The misty rain ceased about the time we finished setting up the field instruments and changed collecting trays. However, it was alternately cloudy with mist falling and sunny all morning, with a persistent bright rainbow in the western sky. The surface winds became stronger as the morning progressed.

We spray-washed specimen plants of beans, radishes, cabbage, carrots, onions, beets, lettuce, and peas. However, by the time we started to wash the corn plants, the wind had become very strong and was picking up the dry surface dust that coated 2 to 3 inches of the bottom of the wetted corn stalks with a thin layer of mud on the windward side. We

stopped washing at this point and took original samples of the unwashed corn, (new) peas, barley, oats, and rye, as well as leaf samples from the avocado tree and wheat plants, to serve as background samples for a possible ceniza-arena shower before further washing of these plants. Background samples of the spray-washed vegetable plants had been previously taken.

Photographs were taken of each set of sampled plants, and each plant of a set was placed in a separate container, so that leaf area measurements could be made for correlation with the dry leaf weight measurements.

A large fraction of the barley plants had died in the past three weeks. The stand on the subplot was quite sparse but the plants still growing, in isolated clumps, appeared to be quite vigorous and had a good green color. The plants were generally 10 to 11 inches tall, with leaf tips that stretched up to about 17 inches from the ground.

The oat plants were fairly dense, but about half of the plants had a heavy attack of rust, easily distinguished from ceniza-arena acid burns by the color, by the uniformity of the effect over the leaf, and by feel (the rust rubbed off, staining the fingers yellow). The plants were 10 to 11 inches tall, with leaf tip heights of up to 15 inches.

The rye plants were in various stages of growth from new head formation to decay of old dead stalks. The grain production was still very low; only a few heads contained more than a dozen kernels of grain.

The wheat stand was fairly dense. The average height of the plants was about 18 inches with leaf tips stretching about 22 inches above the ground. The rust attack on the plants was negligible, and the plants generally appeared vigorous and of good color.

The older remaining bean plants were vigorous, and the newer leaves were 8 to 12 inches from the ground. The crown heights of the newer leaves on the most recently planted beans were 6 to 7 inches.

The beets still had a somewhat wilted appearance, perhaps due to a heavy infestation of aphis that returned in our absence. The tips of the upper leaves were 7 to 8 inches from the ground on most of the plants; the height of the leaves on a few of the plants was as much as 12 inches from the ground.

The new cabbage plants had grown quite vigorously since our last visit and the leaf tips were generally 5 to 6 inches high. The older carrot plants varied quite a bit in size; the leaf heights ranged from about 4 inches to 12 inches, with most plants having a leaf height of

10 inches. Many of the carrot roots were of market size. The celery plants were still not over 1 inch high, not suitable for sampling.

The older corn plants were stunted, as noted previously, and the plant stand-heights (i.e., the height to the bend in the upper leaves) ranged from 12 to 30 inches. Most of the younger corn plants were between 9 and 11 inches high. A few plants were as much as 20 inches high.

The larger (head) lettuce plants had crown heights of up to 8 inches and were 11 inches in diameter. The onion stems had tips as much as 18 inches from the ground, although some of the later-sprouted plants were only 3 to 4 inches high. Most stems still had the characteristic tip-burn, and three plants had formed small seed pods.

The older pea vines were about 3 feet long and carried flowers, as well as fruit, in all stages of development up to near-ripeness. The younger pea vines were about 20 inches long and were flowering; a few small pods were developed on some of the vines.

Most of the pepper plants were still only 4 to 5 inches high. A few plants were no more than 7 inches high, and two plants had a small fruit. Several of the larger plants were in flower. About two-thirds of the potato planting had sprouted, and approximately half of the plants were about 6 inches high.

The upper leaf-tips on the radish plants were all between 3 and 6 inches high. The roots on the larger plants were as much as 3 inches in diameter (no longer edible), and the older leaves were mottled yellow with brown spots and showed evidence of insect damage.

The squash planting had not germinated well; the half-dozen plants were about 3 inches high. Many of the young tomato plants had died; the remainder were growing poorly. The bulk of the plants were no higher than 1 inch; two plants were 3 inches high.

The soil was fairly dry; only 0.17 inch of rain had collected in the gauge since the 10th of December.

We completed the background sampling and left Plot No. 1 at 1130 to return the samples to the MI.

After lunch we loaded the field equipment and drove to Plot No. 2, arriving at 1340. The sky was generally overcast, and a very light mist was coming in from the southwest on a medium fresh breeze. No ceniza-arena was falling, and the volcano was still not visible. The rain gauge had collected 0.36 inch of rain since December 10. The deposit was fairly light

in the post collector but indicated a heavier deposit over the last three weeks than at Plot No. 1. By 1400, we had the field equipment set up and operating.

We washed specimen plants of corn, peas (2), potatoes, peppers, cabbage, radishes, beans, oats, and wheat but did not take background samples. Many of the plants appeared to have received a recent ceniza-arena deposit, so we took original unwashed samples of most of the available plants, including leaf samples of the nearby camphor tree. The underside of the leaves on all plants were quite clean.

At Plot No. 2, the corn and potato plants were larger, more healthy, and more vigorously growing than those at Plot No. 1. Most of the other vegetable plants were much smaller and less vigorous than their counterparts at Plot No. 1.

The previously sampled bean plants were quite small, with damaged and rotting lower leaves. The top leaves were 5 to 6 inches high, and the climber stems were only a few inches longer. The fincero had planted more beans on the 28th of December; these plants had the first pair of horizontal leaves.

The new beet planting was about 1 inch high; a few plants had the second pair of leaves. A few older beet plants remained; the highest leaf tips on these plants were 4 to 5 inches above the ground.

Most of the new cabbage plants were about 1 inch high; the largest plants were 2-1/2 inches high and had their second pair of leaves. The new carrots were also about 1 inch high; some had a second pair of leaves. The older carrot plants had leaf tips as much as 8 inches above the ground.

Most of the corn plants were 2 to 3 feet high and appeared to be healthy, with no ceniza-arena acid burns even at the leaf tips. One large older plant measured 6 feet and 2 inches to the forming tassel.

The newly-planted lettuce plants were up to 2 inches high, and some of the plants had as many as six leaves. The onion plants were generally between 1 and 2 inches high, and the tips of the stems were gray--indicating some acid burn. A few of the original pepper plants remained; these were still no more than 2 to 3 inches high. The potato planting was about 90 percent sprouted and growing well, although the foliage indicated some damage from insects. The leaves appeared to be quite large, perhaps due to lack of sunlight. Most of the plants were 4 to 6 inches high and had lateral spreads up to 11 inches. The lower leaves were lying on the ground.

The vines on the first crop of peas were generally between 40 and 44 inches long and carried both flowers and fruits in all stages of growth up to near-ripening. The vines on the second crop of peas were generally about 24 inches long and were flowering. They appeared to be slightly more luxuriant in growth than those at Plot No. 1.

The barley planting had fairly dense plant coverage. Many leaves showed evidence of rust attack, but the newer leaves were a deep green. The stand was 12 to 14 inches in height; the leaf tips stretched to 18 inches above the ground.

The oat plants, with upright leaf blades, had an average stand height of 14 inches, with leaf-tip heights as much as 16 inches. The oats had a severe rust condition. The planting density was uneven over the subplot.

The rye was now more dense with stalks than that at Plot No. 1. But, as at Plot No. 1, all stages of stalk and grain formation were in evidence. A few large, well-developed grain heads were found in the subplot.

The wheat planting was quite sparse. The stand height averaged about 18 inches, and the leaf-tip heights were as much as 24 inches. Only a few older leaves were noted to be rusted; in general, the wheat plants had a good color and appeared to be growing quite vigorously, considering the cool climate at Plot No. 2.

After taking the original samples, we departed Plot No. 2 shortly before 1630. Although the sun had shone intermittently during our visit to the plot, it was overcast, and a few drops of rain were falling when we drove out the gate.

We went directly to Plot No. 1, arriving at 1650. The sun was shining at the time, and a brilliant rainbow appeared in front of the clouds forming to the east-northeast of the plot. A strong, cool, damp wind, carrying mist, was coming in from the north or northeast. No ceniza-arena was found in the collecting tray, but 0.04 inch of rain had fallen at about 1300. The ground was damp, and even though the surface winds were still very strong, it was no longer picking up dust from the bare ground areas.

We rewashed the plants washed earlier in the morning, as well as washing the corn and pea plants not previously washed. We took a few background samples and a few rain-washed original samples for weathering data. The mist changed to a driving light rain as we finished the sampling.

We left Plot No. 1 shortly after 1730 and returned to the MI and processed samples until about 1900.

January 7

A diffused ceniza-arena cloud streaming to the south from Irazú was observed at about 0530 in the morning. We went to Plot No. 2, since its location was nearest the direction of the visible path of the cloud, arriving at 0745. Several small eruptions contributing to the thin diffuse particle cloud were observed on the drive out. At the plot, the weather was warm and sunny; the wind was calm. A heavy dew still persisted on the foliage, but it was rapidly disappearing. The rainfall since our last visit was 0.02 inch. A very small deposit of ceniza-arena was found on the dew-wetted leaves in the collecting tray.

We started to rewash specimen plants and to take background samples, but at 0820 a shower of ceniza-arena arrived. We exposed the plate collector immediately. Brief showers of ceniza-arena arrived intermittently until shortly after 1000, and we quickly took a set of primary samples of all previously washed plant types. The surface winds during this period were from the southwest and were fairly strong and gusty. At 1045, the showers started again, so we exposed another set of plate collectors. And when the showers subsided at 1120, we took a second set of primary samples.

Because of cloud cover over the mountain ridges, we could not observe whether the volcano was active (we later learned that several large eruptions occurred at about 1100), but the showers at the plot had apparently stopped after 1130. We rewashed all the plants (the deposit was not considered heavy enough for conducting a set of weathering experiments), but before we could take background samples, another shower of ceniza-arena arrived, along with some mist. The deposit continued at a low rate of arrival for some time, so we decided to return the samples to the MI and delay the rewashing. We departed at 1320. The sky was now generally overcast, and the breeze was still coming in from the southwest (180 degrees from the usual direction). Some ceniza-arena, in the form of mud balls and then dry particles, was deposited on the windshield on our drive back to the city. At the MI, we washed the particles from our hair, face, and arms and collected them for measurement.

After lunch, we first went to Plot No. 1 to find out if a deposit had also occurred at that location. We arrived at about 1600 and found only an extremely small deposit in the tray; no ceniza-arena was being deposited. About 0.09 inch of rain had fallen on the area the previous

afternoon. Within 10 minutes after we arrived, a shower of ceniza-arena began. The particles were dry and mostly unagglomerated. After about 20 minutes, the shower stopped, and we took a set of primary samples. Afterward, we washed another set of specimen plants before departing at 1740.

We removed the ceniza-arena particles from our hair at the MI and processed a few samples until 1900. During the day's activities, we had taken 50 plant samples. Shortly before 1900, we were informed that another series of large eruptions had occurred.

We noticed that in the early morning sun the particles were especially visible on the smooth-leaved pea and cabbage plants, where the particles were concentrated in the dew drops clinging to the leaves and stems. The grassy grain leaves had a similar appearance. No particle-laden water drops were found on the rough, fuzzy-surfaced leaves of the potatoes, beans, and corn. The latter were uniformly wetted except that the upper leaves of the corn plants were almost dry.

January 9

At 0530, most of the sky was overcast with natural clouds, so that no eruptive activities at Irazú could be observed. A light coating of freshly deposited ceniza-arena particles was readily visible on the hood of the jeep in the parking lot, indicating that a deposit had occurred during the night. The particles swirled off the hood by the time we had driven half a block.

The deposition in the city indicated the possibility that Plot No.2 had also received one or more ceniza-arena showers during the night. So instead of processing samples at the MI as we had planned, we gathered all available containers for holding samples and proceeded to Plot No. 2.

Arriving shortly after 0700, we found a fairly good deposit of ceniza-arena in the tray. The sun was shining brightly, and the clouds overhead were rapidly evaporating. The air was calm, and the foliage was still glistening with a heavy covering of dew. No rain had fallen since our last visit.

The plant specimens available for sampling provided either secondary or primary samples; in some cases, where we had washed more samples than needed for backgrounds the previous afternoon, both types of samples were taken. On some foliage, such as the potato where the leaves were hanging toward the ground, the water from the heavy dew partially drained from the tips of the leaves and carried some of the ceniza-arena particles

with it. This behavior was most readily observed on the leaves whose tips touched the plastic protection sheet by small mounds of wet particles below the leaf tips.

The particles on green leaves on the oats and barley were concentrated in individual water drops standing on the nonwettable leaves (same as on the cabbage foliage, pea foliage, pea flowers, and pea pods). However, the barley and oat foliage that was covered with rust and other fungus growth was readily wetted, more or less uniformly, with dew (as on the foliage on the potatoes, the larger corn, and the beans). On these leaves, the particles were spread rather uniformly over the leaf surface.

Shortly after 0800, we departed and took the samples back to the MI, where we processed them until the middle of the afternoon. We visited Plot No. 1 at 1600 to check the instruments. A very small deposit of ceniza-arena was found in the tray. The wind was fairly strong, and a light mist was in the air; however, the rain gauge indicated no rainfall. In the strong wind, the mist wetted the windward side of the fence posts and other objects, and sufficient water collected and ran down to the ground to wet the soil thoroughly. This moisture is not collected by the rain gauge.

After recharting the dew balance, we went back to the MI and processed samples until 1830.

January 13

The sky was overcast at 0530, so we could not observe whether the volcano was active. No evidence was found to indicate a ceniza-arena deposit in the city during the night. We first went to the MI and processed samples; around mid-morning we drove out to Plot No. 2, arriving at about 1030. We dismantled the field equipment and loaded it in the jeep for return to the MI. No rain had fallen since our last visit, but a small deposit of ceniza-arena was in the tray collector. It was quite windy during the visit. We departed station at 1130 and returned to the MI.

After lunch at about 1330, we loaded ladders, washing equipment, fence posts, sampling gear, and an assortment of tools into the jeep wagon and drove out to a selected site (designated Station 15) for small tree contamination experiments near Rancho Redondo. On the way we stopped at Plot No. 1; a driving light rain was falling. It was overcast and chilly. There was a small deposit in the tray. We only stopped long enough to pick up a few garden tools and then drove on.

We arrived at Station 15 at 1430. It was warm, although overcast. The station consists of a small grove of little trees whose leaves are similar to mountain laurel. The leaves are quite densely packed on most of the trees. The tree heights range from about 10 to 20 feet. The grove extends from about 50 feet to 200 feet from the road, and the slope down from the road is quite steep, with an inclination of perhaps 30 to 40 degrees.

We selected one symmetrically shaped tree, about 14 feet tall, for sampling and then dug in footings on two sides of the tree for placement of a 10-foot step ladder. With the ladder, a 6-foot-tall person could reach over the top of the tree. We placed a tray collector and set in steel posts for mounting the plate collector and anemometer.

We took original unwashed leaves (actually a twig with several leaves on it) near the bottom of the tree canopy at the north, south, east, and west sides of the tree and also leaves from a central point in the tree at about the same height from the ground. We took a similar set of samples from a height near the top of the tree. We then spray-washed the foliage from the ladder and ground, attempting to wash all the leaves to run off the bulk of the loosely held ceniza-arena particles. We rapidly used most of our 15-gallon supply of water. With the remainder of the water, we spray-washed, more carefully, the leaves in the general areas where we had taken the original samples. Following this, we took a set of background samples of these spray-washed leaves and tagged the branches with the clean leaves for future samplings.

We placed the tray collector and left for San José at 1640. No ceniza-arena was observed to be falling. And although we heard the rumbling of three separate explosions, no ceniza-arena showers developed. We later learned that only steam clouds and a few large rocks (responsible for the noise when they impacted the crater walls) were involved in the eruptions.

After returning to the MI, we processed samples until shortly after 1900.

January 14

The sky was overcast early in the morning, and observation of the volcanic activity was not possible. We processed samples at the MI all morning and prepared plate samplers for the tree contamination measurements. After lunch, we assembled equipment, including two 10-foot ladders, and drove to Station 15, arriving at about 1400. The sky over the valley below was generally overcast, but there was hazy sunshine at the station. The air was warm, with a variable light breeze.

A small deposit of ceniza-arena was in the tray, so we took secondary samples of the spray-washed leaves on the marked twigs and branches. The freshly deposited particles were readily visible on many of the exposed leaves and did not appear to have been subjected to dislocation by wind.

We selected two locations on the tree for placement of the cross or X-rods for mounting greased (2-inch-diameter) discs. As we were placing and leveling the rods in the tree, the wind speed in the area rose. The wind soon became so strong that it ripped leaves from the trees on the ridge above us, and branches were being broken in the woodland below us. At our location, the high winds came in gusts preceded by a roaring sound in the trees on the ridge to our east. This extreme wind still persisted while we repacked our equipment and departed for San José at 1645.

We returned to the MI and processed samples until 1900.

January 15

The sky was overcast again this morning at 0530, and there was no evidence of ceniza-arena deposits in the city. We went directly to Station 15, arriving shortly before 0700. The station was enveloped in a fog, and the air was cool and calm; shortly afterward the fog lifted, with the clouds floating rapidly up the mountainside to the east.

A small deposit of particles was found in the collecting tray and on the leaves. Although the grass was wet with dew, the leaves on the tree were not visibly wet. We took a set of primary samples of the tree leaves at the previous sampling sites.

After sampling, we readjusted the X-rods and rewashed the whole tree from the two ladders. After the tree leaves were mostly dry, we attached the disc collectors at suitable locations on the two X-rods. A few particles could be seen on the exposed discs when we departed station shortly after 1100.

On the way back to the MI, we stopped for a short time at Plot No. 1 to replace charts on the dew balance and hygrothermograph and to check the condition of the plants and other equipment. The tray contained about the same amount of particles as it had on the 13th. It was very windy, and a light driving rain was falling.

We returned to the MI and processed samples until about 1500. We then reloaded the jeep and went back to Plot No. 1. After checking the equipment, we took original samples of the vegetables, wheat, and oats to serve as background samples for possible samples later in the day or for

the following day. The wind was still very strong, and we preferred not to wet the plants and make them more susceptible to retention of dust particles that were being picked up and blown in by the strong surface winds. Except for such plants as lettuce, the foliage was relatively clean and free of the visible large ceniza-arena particles.

We went on to Station 15, arriving shortly before 1630. The deposit in the collecting tray was extremely light, and the disc collectors in the tree had about the same number of particles on the grease film as they had when we left the station earlier in the day. We started to recover the exposed discs and to replace them with clean discs when a short but very dense deposition of ceniza-arena particles occurred. The shower lasted about 5 minutes. We took primary samples and then recovered the remaining exposed disc collectors (as well as a set of plate collectors that had been exposed).

We put new discs on the lower X-rod just as darkness was closing in and departed at 1815. Another less dense shower of ceniza-arena (together with a fine rain) began falling as we left. At the MI, we spray-washed our hair and collected the retained particles.

January 16

It was still dark when we started out at 0515. From the headlights on our vehicle shining on the street, we could observe that a small deposit of ceniza-arena covered the city. The particles that had landed on the hood and windshield of the car under damp conditions the previous evening at Station 15 still remained in place. (Even when dried, the particles were not removed by wind or movement of the car but were easily removed by brushing or rubbing; most were agglomerated particles that crumbled to a rather fine powder when rubbed by moving a finger over the surface.) The new deposit gave a slight hazy appearance to the streets and highlighted the tire tracks.

We arrived at Plot No. 1 shortly after 0530. Because of the heavy cloud cover, there was barely enough light to see objects. The air was almost calm, and the dew was fairly light. A medium to heavy deposit of ceniza-arena was in the collecting tray. No rain had fallen. We took a set of primary samples and then drove up the road to Station 15. We arrived at about 0620; the air was calm and cool. A fairly heavy deposit of ceniza-arena was found in the tray. We recovered the discs on the bottom X-rod and took a set of primary leaf and twig samples around the tree. We took a set of single leaf samples around the periphery of the tree and then a large bag of leaf samples, from random locations throughout the whole tree canopy. At about 0730, a very light shower of

ceniza-arena arrived, and we exposed a set of plate collectors. The shower essentially stopped after 20 minutes. We replaced all the greased discs in the tree and finished the task at about 0900. No ceniza-arena was falling at the time. A weak breeze flowing up the canyon to the northeast occasionally rippled the leaves on the trees, but it was not strong enough to dislodge very many of the particles that had been deposited in the wet condition. The sky remained overcast, with wisps of clouds floating past us at treetop level and on up the canyon. After waiting for either more ceniza-arena or wind for weathering, and neither occurring, we left the station at about 0930, went back to the MI in San José, and processed samples for a couple of hours.

At noon, we went back to Plot No. 1 and took a set of wind-weathered secondary samples. It was very windy at the time, and there was mist in the air. A very small deposit of ceniza-arena was in the tray. Although the wind was strong and gusty, the particles appeared to adhere to the rougher fiber-covered leaves on plants such as corn and potatoes. After checking the field equipment (no rain had fallen during the night), we went on to Station 15 at about 1230.

At Station 15, the sky was overcast; fog clouds were hanging in the air over the nearby ridges, and a light breeze was coming up the canyon from the valley to the southwest. The amount of ceniza-arena particles in the tray appeared to be the same as when we departed the station in the morning. A few particles, apparently dislodged from the tree foliage, could be seen on the greased discs on the X-rods. We took a series of wind measurements. Because of the continued semi-damp condition and low wind speeds, no significant wind erosion of the particles on the tree leaves could be observed. We waited for an hour for the usual midday winds to pick up; however, the air remained relatively calm so we departed station at 1345 and went to the MI to continue the sample processing.

At 1600, we returned to Station 15. The weather conditions were about the same as during our earlier visit. We recovered all the greased discs and took a random sampling of the leaves over the volume of the tree canopy (over 400 leaves were taken). We then recovered all the station equipment. When we were loading the equipment in the jeep, a light rain began; when we departed at 1700, it was raining quite hard.

We processed samples at the MI until 1900. Up to this time, a general light rain was falling over most of the valley. After dinner, we went back to Plot No. 1, arriving at about 2230. The sky was partly cloudy, with bright moonlight shining on the area. However, there was some mist in the calm air; the afternoon showers had deposited 0.07 inch of rain in the rain gauge. The bottom sides of the leaves on some of the

plants were splattered with mud particles. We took a set of wind- and rain-weathered samples of several of the plant specimens (on some we only took the upper unsplattered leaves). We departed at 2300 and returned to the MI, where we processed samples until after midnight.

February 8

During the morning and early afternoon, we drove around the plateau region on the upper slopes of Irazú in search of another tree sampling site. We finally selected a site on a ridge above Rancho Redondo where five pine trees were growing. We designated this location as Station 16 and selected one of the trees, about 25 feet tall, for sampling. At 1415, we began preparing the location, washing as much of the tree as we could with the pressure sprayers on stepladders. We could wet the needles up to about two-thirds of the tree canopy height, and we washed the lower half of the tree as well as we could. We then took background samples of the washed needles and photographs of the tree. We departed the station at 1615 and drove down to Station 15, just below Rancho Redondo. We partially washed the laurel tree that we had sampled on the previous month and took some background leaf samples. A few ceniza-arena particles arrived just as we were loading our equipment to return to San José. We waited about 20 minutes, but no large deposit developed and no ceniza-arena cloud could be observed, so we returned to the MI. There we started processing the few background samples and took scaled photographs of some of the pine needles and pine-tree branch sections.

At about 2200, a short but fairly dense deposit of ceniza-arena occurred in the city of San José. We went back to Plot No. 1, arriving at about 2300, but found no ceniza-arena in the tray. We next visited Station 15 at 2310 and found only a very small deposit on the louvers in the collecting tray (along with dew). A slightly larger deposit was found in the tray at Station 16 (at 2320). We decided that the deposit was not sufficient for adequate sampling of the tree. We then returned to Plot No. 1 and took original samples of the vegetables, corn, wheat, oats, and barley for use as possible background samples. The foliage appeared to be fairly clean. We departed station shortly after midnight. We later learned that a single large eruption occurred at 2130.

Because of our short visits to Plot No. 1, we did not make any detailed observations of the state of the crops. We noted, however, that the oats were badly damaged from the rust attack and appeared to be dying. We also noted that the beans were doing nicely and were heavy with fruit.

February 9

At 0530, the mountain ridges to the east were clearly visible, and the volcano was apparently inactive. After breakfast we drove out to Station 15, arriving shortly after 0700. The deposit in the tray was the same as was found late last night. We picked up our ladders, which we had left at the station the previous afternoon, and went to to Station 16, arriving at about 1730.

The sky was still clear and sunny, but clouds were flowing into the valley below us through the northern passes. The ceniza-arena deposit in the tray was about the same as it had been last night. The air was still calm, so we took a set of primary samples of the pine trees. Each sample consisted of short sections of twigs, or small branches, to which many needles were attached. A series of these samples were taken around the periphery of the tree at locations about one-quarter of the distance from the bottom branches to the top of the tree.

After taking the samples, we rewashed the tree and took background samples of both the matured twigs with needles and the meristematic (new) growth at the end of the branches. We departed at 0845.

On the way back to the MI, we stopped at Plot No. 1 and changed the dew balance chart. No ceniza-arena was found in the tray. We deposited the samples at the MI, prepared more greased discs, and loaded the field equipment for Plot No. 2. We took an early lunch and went to Plot No. 2, arriving shortly after 1200 hours. A light breeze was coming in from the west, and the sky was mostly clear. We found 0.47 inch in the rain gauge which had fallen on the plot since the January sampling period.

The fincero had planted more beans 15 days ago; these new plants were forming their second set of leaves, which were about 2 inches in height. The older leaves generally were measured to be 4-1/2 inches, tip-to-tip. The older bean plants were badly damaged by fungus growths and were considered unfit for sampling.

About half of the remaining radish plants were flowering; the remainder had leaf tips that were 4 to 5 inches from the ground, and the distances across the top of the foliage, leaf tip-to-tip, ranged from 6 to 10 inches.

The larger tomato plants were 4 to 5 inches tall and measured 4 to 5 inches across the top of the leaf spread. The cabbage plants, with evidence of severe insect attack, ranged in height from 1/2 inch to about 7 inches, with most plants being 1 to 2 inches in height (to the tip of

of the leaves). The few remaining pepper plants, improved in leaf color, were 4 to 5 inches tall and had leaf spreads of 5 to 7 inches; the larger of the plants had flower buds.

The small onion plants had stem tips at 4 to 5 inches from the ground, and most of the older stems showed signs of acid burn at the tips. The older carrot plants had leaf-tip heights up to 8 inches and spreads of 6 to 10 inches (tip-to-tip). The later planted (new) carrots had leaf growths between 3 and 6 inches above the ground. The size of the beet plants varied a great deal; the leaf tip heights ranged from 2 to 9 inches, with leaf spreads that ranged from 2 to 10 inches (tip-to-tip).

The lettuce plants were somewhat wilted in the warm afternoon sun; the tip heights were 2 to 5 inches with spreads up to 8 inches for the larger plants. Many of the potato plants were 6 to 7 inches in height, and the measured leaf spreads, tip-to-tip, were generally 10 to 12 inches.

The growth of the corn plants varied considerably. The largest plant was 7 feet, 1 inch tall to the top of the tassel. Most of the plants ranged in height from 2 feet on up; however, a few were smaller. The vines on the older plantings of peas were dead. The second crop of peas was heavy with fruit and still blossoming. The vines were 4 to 5 feet long, but many of the leaves on the vines were spotted with brown rust or other similar fungus growths.

The barley plants were forming seed heads. And, although the lower leaves were badly burned and rusted, the newer leaves had a good green color, and the stand was fairly dense, averaging 2-1/2 feet in height. The oat crop was almost dead from the rust attack. The older leaves were dead and rotting, and the new leaves on the remaining plants appeared to be smaller than they were last month. The leaf-tip heights of the sickly appearing new leaves ranged from 9 to 12 inches. The Colombian wheat was fully headed out, with most heads at a stand-height of 3 feet. The rye appeared the same as it had the previous two months, with new forming heads mixed with dead, old decaying stalks; some of the newer heads seemed to have more developing seed grains than previously.

During the observation tour, the surface winds increased and became very strong, picking up dust across the vegetable plot. It was not possible to wash plants in the wind, but, when gust speeds decreased at about 1430, we took original samples of all the plants. We departed at about 1530 and took the samples back to the MI.

We picked up additional equipment at the MI and went on to Station 15, arriving at 1645. It was sunny and calm. No ceniza-arena had fallen during the day, so we rewashed Tree No. 1, took a random background sample

of leaves, and changed the collecting tray. We started to wash another densely leaved tree but stopped as darkness set in. We reloaded the vehicle and started back to San José at about 1800. In washing Tree No. 1, we noticed that its leaves had sustained much more insect attack than it had in January and more than the surrounding trees which we had not washed. Apparently the insects found the clean foliage more palatable than the ceniza-arena covered foliage on the other trees.

At the MI, we took a few more scaled photographs of some of the plant samples; we stopped for dinner at 1915. Except for a few small vapor eruptions, the volcano was quiet all day. It had not been active since the large eruption the previous evening at 2130.

February 13

One member of the team stayed at Station 16 all night to discourage some unknown person or persons who had been molesting the gross collector trays. No eruptions were detected, and no ceniza-arena fell in the area. The sky was clear from the time that the sun rose. We processed samples at the MI from about 0630 to 0900 and went to the nursery near El Coco to pick up the citrus trees we ordered. They turned out to be Marcli seedless grapefruit trees. The nurseryman told us that the roots on orange trees were sensitive at this time of year, and the plants could not withstand transplanting shock. He refused to sell them, so we took the grapefruit trees. This change was satisfactory since the grapefruit trees were somewhat larger than the available orange trees. On the way back to the MI with the trees, the jeep stalled at a traffic signal light, and we were subjected to the blaring horns from some fifty cars. Two truck drivers behind us helped push the jeep just enough so they could get around it. This left the jeep in the center of the intersection. The bystanders laughed at the situation but helped to push the jeep out of the street into an illegal parking zone. But with assistance from the people at the MI, the jeep and trees were delivered at the MI by 1130.

After lunch we reloaded the trees into the jeep, got it started on a downhill run, and drove out to Station 16. We put the three grapefruit trees in one shallow hole not far from Pine Tree No. 2; in this arrangement, the combined foliage of the three small trees formed a leaf canopy somewhat similar to that of a single, small, fruit-producing tree. After planting the grapefruit trees, we drove on past Rancho Redondo toward the plateau area nearly south of Irazú where we found a juniper among the brush along the road. We cut the top section from the specimen and took it to Station 16 and placed it near the other trees.

We washed all the leaves on the composite grapefruit tree and took background samples of the clean leaves. At 1630, we left Station 16 and returned to the MI, stopping briefly at Plot No. 1 on the way. The sun shone all day; as far as we could recall, this was the first time in all our visits to Costa Rica that this meteorological condition had occurred.

February 14

The day started out sunny and clear. The volcano continued to be quiet. After breakfast we drove out to Station 16, with a brief stop at Plot No. 1, around 0745 to change the chart on the dew balance. We arrived at Station 16 at 0800. On location we spray-washed the juniper and sprayed water on the grapefruit tree to reduce leaf wilt. After taking scaled photographs of these two plant specimens, we took background samples of the juniper bush and at 0915 started back to San José.

We decided to visit Irazú to observe the condition of the volcano. The weather at the peak was clear, sunny, and warm, although the clouds were building up in the surrounding valleys. We walked across the flat area just south of the crater, which was covered with scattered rocks (or bombs), to the lip of the crater. We stopped near the location where we had been almost exactly a year ago. The ruins of the house that we had walked around were now within the crater lip, about 20 feet below the rim. In some places, the rocks and hard-packed ceniza-arena made a mound about 50 feet thick over the original flat area around the crater's edge.

The sides of the crater were very steep, extending perhaps as much as 1,000 feet below us. The sloping walls were cut in a regular pattern by shallow gulleys running down into the crater. There was no evidence of fresh ceniza-arena deposits on the walls. Rather, the surface of the sloping walls appeared hard-packed, as they might be after a heavy rain. Farther down toward the crater mouth, vertical rock cliffs could be seen.

The sulfur smell was quite strong (a very light breeze circulated the air). Whiffs of a very white steam cloud rose continuously from the mouth of the crater, but the cloud dissipated before it reached the height of the rim. White deposits, probably of pure sulfur, could be seen at the base of the crater opposite from our position.

We took a series of photographs of the view and went back to the observation point. When we reached this location, a thin steam cloud, with a light-tan coloring, was rising to several hundred feet above the crater rim.

February 16

The sky was overcast this morning, and a gray cloud hung in the canyon as we approached Rancho Redondo. We arrived at Station 16 at 0730 and found a small deposit in the collector. The particles were evenly distributed on the slats, indicating that they had not been disturbed by wind.

The grapefruit tree was immediately sampled. Although the leaves were dry, the particles seemed to stick, and no difficulty was encountered in removing single leaves and transferring them to polyethylene bags. All of the leaves on selected twigs on each tree were taken to ensure a representative sample. Approximately 200 new leaves, one-year-old leaves, and two-year-old leaves in a variety of orientations were taken. When the grapefruit tree sampling was completed at 0825, we recovered the collector and started wind measurements with the portable anemometer, which we mounted on a corner post of our fenced enclosure.

We then sampled the juniper bush. Since a ladder was required to obtain samples from the pine tree and we didn't have one with us, we departed at 0840. A light breeze was blowing as we left.

We arrived at Station 15 at 0845. A small deposit was found in the collector, and the sun had not yet dried the heavy dew at this location. We recovered the disc collectors from both the top and bottom X-rods in the laurel tree and took leaf samples from the top and bottom locations of all four sides of the tree.

We returned to Station 16 with a ladder, arriving at 0925. We recovered the five disc collectors from a nearly dead tree, and, since a light wind had been recorded, we took wind-weathered samples from the grapefruit trees. The old leaves seemed to have retained most of the initial deposit, but the new leaves appeared to have been blown clean. We took photographs of the locations where leaves had been removed to enable reconstruction of the contamination pattern.

We sampled the pine tree, obtaining mature needles and meristematic tissue from each of its four sides. Frequent readings of the anemometer were taken, and it was left in operation when we departed station at 1040. We returned to the MI in San José to obtain more sampling containers. En route we stopped at Plot No. 1 and found no deposit in the collector.

After lunch, we returned to Station 16, arriving at 1255. A very small additional deposit had occurred, and the collector was recovered. The grapefruit tree was sampled again to obtain wind-weathering data. The tree was then spray-washed and new background samples taken.

The anemometer was recovered from the post. We departed at 1435 and returned to the MI with the several hundred samples that had been collected during the day.

February 23

We arrived at Station 15 at 0710 and recovered the station equipment. No measurable deposit of particles was on the greased discs in Tree No. 1. We carefully measured the location of the discs on the X-rods.

We arrived at Plot No. 1 at 0755 and recovered the equipment. A very small deposit was found in the post collector.

In the afternoon, we visited Mr. Roberto Alfaro and made the final arrangements to close out the project in Costa Rica. Mr. Mario Juash was present during the meeting to ensure that our laborers were paid off according to law.

The remainder of the afternoon was spent preparing to return to the United States and saying goodby to our many friends in Costa Rica.

Appendix E

CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS

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Appendix E

CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS

The ceniza-arena sieve analysis measurements include both the separation of the ceniza arena particles into size groups by sieving and the separation of the subsieve sizes in a water settling column. The experimental procedures for each method are the same as described in Part One of this report. The settling column, even when operated properly, consistently gave low values for the weight fractions for particle diameters larger than 10 to 15 microns. This result indicated that either an error in the calibration curve existed or the column was consistently overloaded so that the particles with diameters between 15 and 44 microns settled more rapidly than was expected. (It is known that two particles, when near each other, will settle with twice the rate that each would settle when isolated in a viscous media.) Because of this bias in the analyses, the settling data for the particle diameters of 20 and 30 microns were corrected from a graphically derived correction curve, so that the settling column data joined smoothly with the sieving data at a diameter of 44 microns (smallest sieve).

The large amount of sieving data and limitations on its application (see text) were considered sufficient reasons for not applying graphically derived corrections for agglomeration, as was done for the data presented in Part One of this report. The only major use of the data is to assess whether the foliage retained some fraction of the particles of all diameters deposited or retained only particles within certain diameters.

The measured data on the weight distribution of the ceniza-arena particles recovered from both the trays and foliar samples (by sample set) at Plot No. 1 are summarized in Table E-1; the data for the samples taken at Plot No. 2 are summarized in Table E-2; and the data for the samples from Stations 15 and 16 are given in Table E-3. Sieving data for the ceniza-arena originally recovered from some original background and grain rewash samples are summarized in Table E-4. The data for the original samples should indicate the distribution of the particles that persisted on the foliage as a result of the climatic conditions and

deposit frequency for several days previous to sampling. The data for the background samples should indicate the distribution of the particles that could not be readily removed from the foliage with high pressure spraying. The data for the grain rewash samples should indicate the distribution of the particles that penetrated the leaf folds around the grain stalks on the grain heads (including those strongly held on the surfaces of the foliage).

The data on the weight distribution of single tray samples not given in any of the preceding tables are summarized in Table E-5. In some cases, the tray sample distributions in other tables are a combination of the data for several of the single tray samples of Table E-5; these may be noted by the letter "s" following the number of the last tray in the series.

All the data were plotted on logarithmic probit graph paper, and the mass median diameter, d_{50}, for each sample was read from a curve drawn through the plotted points. For most samples, a break in the plotted curve occurred at a diameter between 5 and 10 microns and at an accumulated weight percentage ranging from 1 to 20. The curves indicated both maximum and minimum diameters for essentially all samples; a log normal distribution (with no indication of maximum and minimum diameters) was found only for one or two samples. The usual shapes of the weight distribution curves are shown in Figures E-1 and E-2, in which the data for sample set No. 26 from Plot No. 1 are plotted. The discontinuation in the curves between a diameter of 5 and 10 microns is probably the lower limit of the diameter of the airborne particles that were deposited, and the percentage at the discontinuity is the relative amount of the smaller particles that were agglomerated with larger particles.

None of the distribution data was corrected for background. For most sampling periods when the deposit levels were fairly large, the amount of background particles was relatively small and would have little effect on the shape of the distribution, except perhaps at the upper limit of the distribution where a few large particles could contribute a few tenths of a percent to the sample weight. In Figures E-1 and E-2, for example, several of the samples indicate a contribution of up to 0.5 percent of particles with diameters larger than 295 microns, whereas none was found in the tray sample. During the last months of the operation, when the deposit levels became quite small, the relative contribution of the background particles could have, in some cases, influenced the shape of the distribution curves and caused some shift in the derived d_{50} values.

An additional source of possible error in the sizing measurements, especially during the last half of the operation, was the small sample weights. And, in fact, some sample sets were not analyzed because of the small total sample weights. However, important samples, such as the plate collector samples, were sieve-analyzed with total sample weights of 25 mg and less.

Table E-1

SUMMARY OF CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS
FOR SAMPLES FROM PLOT NO. 1
(Accumulated Weight Distribution in Percent)

Sample Number	Type	Particle Diameter in Microns										d_{50}
		3	5	10	20	30	44	88	175	295	>295	(microns)
						Set 1. P Samples						
14007	Tray	0.030	0.10	0.87	11.2	22.6	31.9	53.6	91.7	99.4	100.0	81
14013	Beans	-	-	-	-	-	58.6	75.5	92.9	99.3	100.0	32
14015	Cabbage	-	-	-	-	-	37.2	59.9	89.6	99.2	100.0	71
14014	Corn	-	-	-	-	-	25.7	43.9	82.7	99.1	100.0	102
14012	Squash	-	-	-	-	-	50.3	71.6	94.4	99.2	100.0	44
14016	Tomato	-	-	-	-	-	39.8	55.9	87.6	99.0	100.0	76
14019	Rye	-	-	-	-	-	39.9	58.8	88.9	99.4	100.0	72
14017	Wheat	-	-	-	-	-	42.6	63.2	92.1	99.4	100.0	62
14018	Wheat	-	-	-	-	-	42.3	64.1	93.3	99.4	100.0	62
						Set 2. P Samples						
14060	Tray	0.20	0.35	1.1	14.7	26.4	33.9	57.8	98.5	100.0	-	77
14073-1	Beans	-	-	-	-	-	69.9	85.9	98.4	100.0	-	25
14075	Cabbage	-	-	-	-	-	40.4	65.1	94.8	100.0	-	63
14076	Corn	-	-	-	-	-	26.5	42.7	81.8	99.3	100.0	103
14072-1	Squash	7.0	9.7	16.2	48.0	63.0	71.2	86.2	98.1	100.0	-	21
14074	Tomato	-	-	-	-	-	42.6	63.4	94.3	99.5	100.0	63
14071	Barley	1.0	1.8	5.3	23.2	35.8	44.9	67.0	96.0	99.7	100.0	56
14070	Oats	1.4	2.1	5.4	24.8	36.2	42.9	63.3	95.8	99.8	100.0	63
14069	Rye	1.8	2.9	7.7	33.6	46.5	52.1	69.7	95.1	99.6	100.0	36

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 2. P Samples (continued)							
14067	Wheat	1.7	2.4	6.1	29.0	43.2	51.3	72.9	96.2	99.9	100.0	40
14063	Wheat	2.7	3.5	7.4	24.2	34.3	40.6	59.5	91.7	99.2	100.0	69
					Set 3. SR Samples							
14079	Beans	0.16	0.30	0.87	3.4	6.8	12.3	31.2	81.0	98.0	100.0	120
14080-1	Beans	-	-	-	-	-	20.0	40.2	86.8	99.3	100.0	102
					Set 4. P Samples							
14077	Tray	0.45	0.68	1.6	16.7	29.7	38.9	59.9	92.8	99.9	100.0	71
14085-1	Beans	0.22	0.86	5.1	20.0	33.0	44.2	66.4	95.8	99.9	100.0	56
14088	Cabbage	0.50	0.96	2.9	15.5	27.0	36.3	60.9	94.0	99.9	100.0	69
14087	Corn	0.66	1.1	3.3	16.0	27.0	36.8	60.4	93.3	99.8	100.0	71
14083-1	Squash	0.50	0.95	4.1	19.0	30.6	39.3	62.1	94.8	99.9	100.0	66
14084-1	Squash	1.3	2.1	5.2	20.4	32.2	41.7	63.1	95.5	100.0	-	64
14086	Tomato	1.0	2.1	5.4	18.7	27.3	34.3	55.8	92.0	99.7	100.0	78
14082	Rye	0.50	0.63	1.7	17.7	31.0	39.1	60.9	94.1	99.9	100.0	69
14081	Wheat	0.60	0.74	1.2	22.5	38.2	46.3	62.9	94.8	99.9	100.0	58
					Set 5. P Samples							
14089	Tray	0.50	0.84	1.8	12.8	23.0	34.0	50.7	88.8	100.0	-	87
14097-1	Beans	0.35	0.67	4.2	15.5	26.0	37.9	56.5	93.4	100.0	-	68
14103-1	Cabbage	0.85	1.1	1.8	17.0	29.0	36.3	56.8	92.7	99.9	100.0	75
14101	Corn	1.3	1.6	4.5	18.0	27.0	33.9	52.2	90.7	99.8	100.0	84
14095-1	Squash	1.2	1.7	4.6	20.0	30.5	36.7	55.0	92.0	99.9	100.0	78

Table E-1

SUMMARY OF CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS
FOR SAMPLES FROM PLOT NO. 1
(Accumulated Weight Distribution in Percent)

Sample Number	Type	Particle Diameter in Microns										d_{50}
		3	5	10	20	30	44	88	175	295	>295	(microns)
						Set 1. P Samples						
14007	Tray	0.030	0.10	0.87	11.2	22.6	31.9	53.6	91.7	99.4	100.0	81
14013	Beans	-	-	-	-	-	58.6	75.5	92.9	99.3	100.0	32
14015	Cabbage	-	-	-	-	-	37.2	59.9	89.6	99.2	100.0	71
14014	Corn	-	-	-	-	-	25.7	43.9	82.7	99.1	100.0	102
14012	Squash	-	-	-	-	-	50.3	71.6	94.4	99.2	100.0	44
14016	Tomato	-	-	-	-	-	39.8	55.9	87.6	99.0	100.0	76
14019	Rye	-	-	-	-	-	39.9	58.8	88.9	99.4	100.0	72
14017	Wheat	-	-	-	-	-	42.6	63.2	92.1	99.4	100.0	62
14018	Wheat	-	-	-	-	-	42.3	64.1	93.3	99.4	100.0	62
						Set 2. P Samples						
14060	Tray	0.20	0.35	1.1	14.7	26.4	33.9	57.8	98.5	100.0	-	77
14073-1	Beans	-	-	-	-	-	69.9	85.9	98.4	100.0	-	25
14075	Cabbage	-	-	-	-	-	40.4	65.1	94.8	100.0	-	63
14076	Corn	-	-	-	-	-	26.5	42.7	81.8	99.3	100.0	103
14072-1	Squash	7.0	9.7	16.2	48.0	63.0	71.2	86.2	98.1	100.0	-	21
14074	Tomato	-	-	-	-	-	42.6	63.4	94.3	99.5	100.0	63
14071	Barley	1.0	1.8	5.3	23.2	35.8	44.9	67.0	96.0	99.7	100.0	56
14070	Oats	1.4	2.1	5.4	24.8	36.2	42.9	63.3	95.8	99.8	100.0	63
14069	Rye	1.8	2.9	7.7	33.6	46.5	52.1	69.7	95.1	99.6	100.0	36

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 2. P Samples (continued)							
14067	Wheat	1.7	2.4	6.1	29.0	43.2	51.3	72.9	96.2	99.9	100.0	40
14063	Wheat	2.7	3.5	7.4	24.2	34.3	40.6	59.5	91.7	99.2	100.0	69
					Set 3. SR Samples							
14079	Beans	0.16	0.30	0.87	3.4	6.8	12.3	31.2	81.0	98.0	100.0	120
14080-1	Beans	-	-	-	-	-	20.0	40.2	86.8	99.3	100.0	102
					Set 4. P Samples							
14077	Tray	0.45	0.68	1.6	16.7	29.7	38.9	59.9	92.8	99.9	100.0	71
14085-1	Beans	0.22	0.86	5.1	20.0	33.0	44.2	66.4	95.8	99.9	100.0	56
14088	Cabbage	0.50	0.96	2.9	15.5	27.0	36.3	60.9	94.0	99.9	100.0	69
14087	Corn	0.66	1.1	3.3	16.0	27.0	36.8	60.4	93.3	99.8	100.0	71
14083-1	Squash	0.50	0.95	4.1	19.0	30.6	39.3	62.1	94.8	99.9	100.0	66
14084-1	Squash	1.3	2.1	5.2	20.4	32.2	41.7	63.1	95.5	100.0	-	64
14086	Tomato	1.0	2.1	5.4	18.7	27.3	34.3	55.8	92.0	99.7	100.0	78
14082	Rye	0.50	0.63	1.7	17.7	31.0	39.1	60.9	94.1	99.9	100.0	69
14081	Wheat	0.60	0.74	1.2	22.5	38.2	46.3	62.9	94.8	99.9	100.0	58
					Set 5. P Samples							
14089	Tray	0.50	0.84	1.8	12.8	23.0	34.0	50.7	88.8	100.0	-	87
14097-1	Beans	0.35	0.67	4.2	15.5	26.0	37.9	56.5	93.4	100.0	-	68
14103-1	Cabbage	0.85	1.1	1.8	17.0	29.0	36.3	56.8	92.7	99.9	100.0	75
14101	Corn	1.3	1.6	4.5	18.0	27.0	33.9	52.2	90.7	99.8	100.0	84
14095-1	Squash	1.2	1.7	4.6	20.0	30.5	36.7	55.0	92.0	99.9	100.0	78

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 5. P Samples (continued)							
14099	Tomato	2.1	2.6	4.7	17.0	27.0	36.5	56.1	91.4	99.8	100.0	76
14093	Barley	1.1	1.5	3.5	17.5	29.0	38.9	56.9	93.1	100.0	-	73
14092	Oats	0.45	0.78	4.2	18.0	29.3	38.8	56.2	91.8	100.0	-	74
14094	Rye	0.97	1.4	3.5	16.5	28.5	39.3	57.3	91.9	99.9	100.0	67
14091	Wheat	2.0	3.1	5.2	20.0	31.0	40.3	58.9	93.4	100.0	-	69
					Set 6. 2 P Samples							
14089s	Trays	0.52	0.70	1.7	17.8	30.0	37.2	52.3	86.96	95.5	100.0	84
14098-1	Beans	1.3	1.9	5.4	17.0	27.3	39.1	59.3	93.9	100.0	-	68
14104-1	Cabbage	0.90	1.3	4.4	17.0	26.2	34.6	52.0	90.6	99.9	100.0	84
14102	Corn	1.1	1.5	4.1	19.5	30.0	37.5	58.6	93.8	99.9	100.0	72
14100	Tomato	2.7	3.2	4.3	16.2	27.0	38.5	62.0	94.7	100.0	-	66
					Set 7. P Samples							
14118s	Trays	0.68	0.93	2.0	8.4	15.7	24.5	42.4	95.2	100.0	-	105
14121	Beans	2.5	3.5	7.0	16.0	24.0	34.1	55.0	93.0	99.2	100.0	75
14123	Cabbage	-	-	-	-	-	36.2	56.5	94.7	99.1	100.0	76
14122	Corn	1.4	2.0	3.9	13.8	21.6	28.2	50.0	90.9	99.6	100.0	88
14120	Tomato	1.3	2.2	6.4	16.0	24.5	34.4	54.6	91.3	99.2	100.0	75
14127	Barley	0.0	0.0	0.68	13.5	27.2	37.6	64.9	94.3	99.7	100.0	64
14126	Oats	-	-	-	-	-	33.4	64.1	94.1	99.7	100.0	67
14125	Rye	0.90	1.4	4.7	20.0	34.0	46.4	69.4	95.3	99.8	100.0	50
14124	Wheat	-	-	-	-	-	36.6	61.6	93.7	99.7	100.0	68

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 8. P Samples							
14119	Tray	0.30	0.44	1.2	6.9	16.2	31.6	70.8	99.9	100.0	-	63
14130-2	Beans	-	-	-	-	-	32.3	69.8	99.2	99.9	100.0	65
14130	Beans	1.3	1.7	4.5	13.2	23.5	37.8	76.8	99.8	100.0	-	57
14129	Cabbage	1.5	2.2	5.4	16.0	26.8	36.6	73.2	99.9	100.0	-	54
14128	Corn	0.85	1.3	4.3	14.5	25.5	34.6	69.3	97.4	99.9	100.0	57
14134	Squash	0.46	0.58	2.1	7.8	14.8	25.7	56.7	94.2	99.8	100.0	77
14132	Tomato	0.17	1.0	4.1	12.0	21.3	35.1	72.4	99.7	100.0	-	61
14136	Barley	-	-	-	-	-	38.6	75.5	99.2	100.0	-	56
14137	Oats	0.92	1.3	4.0	13.0	24.0	38.0	72.1	98.6	100.0	-	57
14135	Wheat	0.60	0.77	2.6	10.9	21.0	35.3	70.1	97.6	99.9	100.0	60
					Set 9. SW Samples							
14133s	Trays	0.22	0.40	1.4	8.0	17.7	33.4	71.5	99.9	100.0	-	61
14140	Beans	0.96	1.6	4.8	16.2	28.6	44.5	76.4	99.3	100.0	-	50
14141	Cabbage	1.3	2.0	4.9	15.0	26.0	41.2	78.0	99.7	100.0	-	52
14142	Corn	0.0	1.4	9.3	17.3	24.6	34.3	60.6	95.1	99.9	100.0	70
14139	Squash	1.1	1.6	5.1	18.6	33.3	50.5	81.8	98.6	99.7	100.0	43
14143	Barley	1.2	1.9	4.8	15.5	27.2	41.9	70.9	98.0	99.9	100.0	54
14144	Oats	1.0	1.7	4.8	15.0	26.0	41.5	73.3	98.3	99.9	100.0	54
14145	Rye	1.5	2.1	5.3	16.6	28.2	43.0	73.7	98.4	100.0	-	52
14146	Wheat	1.1	1.8	5.1	17.2	29.6	44.6	73.4	97.7	99.9	100.0	50

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 10. SW Samples							
14138s	Trays	0.32	0.50	1.3	7.4	16.6	32.4	72.0	99.9	100.0	-	62
14153	Beans	1.4	2.1	5.6	16.8	28.4	43.0	75.1	98.4	99.9	100.0	51
14154	Cabbage	2.4	2.9	6.5	18.0	29.6	44.7	76.9	99.9	100.0	-	50
14155	Corn	-	-	-	-	-	37.1	65.9	97.0	99.9	100.0	62
14152	Squash	1.8	2.2	5.7	22.0	38.5	54.9	83.7	98.6	99.6	100.0	39
14156-2*	Squash	-	-	-	-	-	37.9	73.4	99.7	99.9	100.0	57
14150	Barley	2.8	3.2	7.0	19.2	32.0	46.8	76.5	98.9	99.9	100.0	48
14149	Oats	1.8	2.5	7.3	20.6	33.6	49.3	79.1	99.6	99.9	100.0	45
14151	Rye	1.4	2.1	5.6	18.0	30.5	45.8	76.4	99.0	100.0	-	48
14148	Wheat	2.4	3.3	7.2	21.8	35.7	52.5	81.7	99.1	99.9	100.0	42
					Set 11. SWR Samples							
14147s	Trays	0.30	0.52	1.5	8.0	17.5	32.6	69.8	98.1	99.1	100.0	62
14163	Beans	0.35	0.60	1.7	5.5	10.5	18.1	42.5	88.8	99.2	100.0	96
14164	Cabbage	-	-	-	-	-	15.6	39.3	88.4	99.5	100.0	10[illegible]
14165	Corn	0.50	0.82	2.0	7.5	14.3	24.6	53.9	93.4	99.7	100.0	81
14162	Squash	0.32	0.49	1.1	4.0	8.3	15.3	41.7	88.3	99.1	100.0	100
14158	Barley	2.7	2.9	3.8	14.0	25.7	40.5	72.2	97.4	99.9	100.0	54
14159	Oats	-	-	-	-	-	38.3	72.7	98.1	99.9	100.0	56
14160	Rye	-	-	-	-	-	44.8	69.8	96.1	99.8	100.0	51

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 12. S Samples						
14175	Tray	0.30	0.45	1.3	10.3	22.6	37.8	63.5	96.7	99.9	100.0	59
14177	Wheat	0.78	1.2	3.1	14.3	26.9	42.3	70.5	98.1	99.9	100.0	53
14178	Wheat	1.4	2.4	4.7	20.4	36.5	53.2	79.4	98.8	99.8	100.0	41
						Set 13. SW Samples						
14175	Tray	0.30	0.45	1.3	10.3	22.6	37.8	63.5	96.7	99.9	100.0	59
14183	Oats	2.9	3.7	5.5	20.0	34.0	49.4	74.3	98.5	99.9	100.0	45
14179	Wheat	0.48	0.82	4.1	18.0	32.3	48.1	72.6	97.7	99.8	100.0	16
14180	Wheat	-	-	-	-	-	53.7	77.2	98.0	99.5	100.0	41
14181	Wheat	-	-	-	-	-	49.8	79.98	98.6	99.5	100.0	45
14182	Wheat	-	-	-	-	-	46.8	73.2	98.1	99.8	100.0	47
14184	Wheat	-	-	-	-	-	50.6	75.1	97.0	99.5	100.0	44
14185	Wheat	1.3	2.1	5.6	20.8	35.4	50.9	75.3	97.9	99.8	100.0	43
14186	Wheat	3.0	3.9	6.9	25.0	41.2	56.4	79.1	98.3	99.1	100.0	37
14187	Wheat	3.0	3.9	7.2	22.3	36.0	50.8	76.3	97.8	99.8	100.0	43
						Set 14. SWR Samples						
14175	Tray	0.30	0.45	1.3	10.3	22.6	37.8	63.5	96.7	99.9	100.0	59
14188	Wheat	-	-	-	-	-	54.7	79.0	98.3	99.6	100.0	40
14189	Wheat	1.8	2.4	5.2	21.2	36.5	52.6	77.6	97.5	99.7	100.0	41
						Set 15. SWR Samples						
14175	Tray	0.30	0.45	1.4	10.3	22.6	37.8	63.5	96.7	99.9	100.0	59
14190	Wheat	4.1	5.0	10.4	25.0	37.8	51.6	75.1	96.5	99.4	100.0	43
14191	Wheat	4.4	5.6	11.1	26.4	39.8	54.4	81.7	98.6	99.9	100.0	39

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d50 (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 16. P Samples							
14192	Tray	0.56	0.88	2.2	15.0	28.2	40.9	67.3	92.4	97.3	100.0	58
14194	Barley	0.54	0.87	2.2	14.7	27.6	39.3	64.8	88.9	93.6	100.0	61
14195	Oats	0.65	1.0	3.5	16.6	27.6	37.9	63.3	92.9	96.7	100.0	65
14196	Rye	-	-	-	-	-	29.7	59.1	95.9	100.0	-	71
14197	Wheat	-	-	-	-	-	19.9	47.3	93.8	100.0	-	92
					Set 17. P Samples							
14195	Tray	0.36	0.57	1.6	15.3	27.2	35.1	54.2	92.5	99.8	100.0	79
14200-1,3	Beans	2.5	4.3	10.8	30.0	42.2	50.6	70.4	96.1	99.3	100.0	43
14200-2	Beans	-	-	-	-	-	38.1	59.1	93.7	99.0	100.0	71
14200	Beans	-	-	-	-	-	49.0	68.9	95.8	99.3	100.0	47
14202	Cabbage	3.0	4.0	9.4	26.3	36.0	41.4	56.7	94.7	99.9	100.0	73
14203	Corn	-	-	-	-	-	48.4	66.4	96.3	99.8	100.0	51
14198-1	Squash	0.34	0.53	2.5	22.8	36.0	42.3	61.2	95.8	100.0	-	66
14199-2	Squash	-	-	-	-	-	39.2	58.1	93.6	99.6	100.0	72
					Set 18. S Samples							
14196	Tray	0.09	0.12	0.45	2.2	5.1	6.5	10.9	61.0	96.2	100.0	162
14212	Beans	-	-	-	-	-	39.8	61.4	91.1	98.3	100.0	60
14215	Cabbage	-	-	-	-	-	7.2	11.6	60.3	95.7	100.0	160
14213	Corn	0.80	1.2	2.6	6.9	11.2	16.5	29.6	81.5	98.7	100.0	146
14214	Corn	1.4	1.9	4.6	14.8	23.2	32.2	46.8	83.95	98.7	100.0	110
14211-1	Squash	0.96	1.4	4.3	10.4	15.6	21.3	30.2	76.0	98.4	100.0	152
14205	Barley	1.0	1.5	4.5	17.2	29.2	41.3	60.0	93.4	99.4	100.0	59

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 18. S Samples (continued)							
14208-2	Barley	1.0	2.1	6.8	18.6	28.4	38.7	56.2	91.95	99.6	100.0	67
14206	Oats	1.7	2.8	6.7	24.6	39.3	52.7	70.8	96.0	99.8	100.0	41
14207-2	Oats	-	-	-	-	-	71.6	81.9	94.8	99.3	100.0	20
14204	Wheat	1.4	2.2	7.6	22.9	35.4	47.9	66.3	94.3	99.8	100.0	48
14210-2	Wheat	-	-	-	-	-	58.9	74.2	94.6	99.0	100.0	32
					Set 19. SW Samples							
14209s	Tray	0.09	0.12	0.45	2.2	5.1	6.5	10.9	60.7	96.0	100.0	160
14229-2	Barley	1.9	2.4	4.9	18.0	26.6	32.0	49.7	89.3	99.5	100.0	89
14228-2	Oats	-	-	-	-	-	63.8	73.7	91.5	99.3	100.0	26
14227-2	Wheat	-	-	-	-	-	52.3	66.9	88.1	94.6	100.0	38
					Set 20. P Samples							
14216	Tray	0.41	0.88	1.8	7.4	12.8	18.9	27.7	56.4	96.8	100.0	160
14233	Cabbage	-	-	-	-	-	39.8	51.3	77.7	99.8	100.0	80
14234	Corn	-	-	-	-	-	33.8	53.7	82.5	99.8	100.0	75
14231-1	Squash	-	-	-	-	-	56.5	67.2	86.6	98.8	100.0	33
14231-1,3	Squash	-	-	-	-	-	53.8	68.0	90.5	97.7	100.0	35
14231	Squash	-	-	-	-	-	54.7	67.7	89.3	98.0	100.0	33
14236-2	Barley	0.78	1.0	2.1	18.0	31.5	40.2	58.5	92.5	99.7	100.0	69
14237-2	Oats	-	-	-	-	-	72.9	84.5	93.0	97.7	100.0	24
14235-2	Wheat	-	-	-	-	-	58.8	73.0	94.1	99.4	100.0	30

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 21. P Samples							
14230	Tray	0.11	0.22	0.95	7.3	14.0	19.6	38.2	84.8	99.3	100.0	107
14240	Cabbage	1.0	1.7	5.7	19.4	28.9	35.2	46.2	72.3	98.7	100.0	102
14241	Corn	2.4	3.3	7.9	26.0	36.6	42.3	52.1	88.5	99.4	100.0	79
14239-1	Squash	1.6	2.3	4.7	23.3	32.7	36.8	47.6	90.8	99.8	100.0	93
					Set 22. P Samples							
14230s	Tray	0.14	0.30	1.04	8.8	15.6	19.5	28.2	81.3	99.0	100.0	126
14243-2	Barley	0.48	0.80	3.2	15.8	25.2	31.7	49.1	90.0	99.4	100.0	90
14244-2	Oats	-	-	-	-	-	59.7	68.9	88.2	99.1	100.0	28
14242-2	Wheat	-	-	-	-	-	48.4	61.0	92.2	96.7	100.0	60
					Set 23. SWR Samples							
14238	Tray	0.22	0.36	1.7	14.8	26.4	35.2	56.1	92.7	99.8	100.0	77
14250-1,3	Barley	-	-	-	-	-	35.8	56.0	93.1	99.7	100.0	77
14250-2	Barley	-	-	-	-	-	32.6	52.0	91.1	99.5	100.0	85
14250	Barley	-	-	-	-	-	34.8	54.7	92.5	99.6	100.0	79
14248-1,3	Oats	-	-	-	-	-	42.0	64.4	94.9	99.7	100.0	63
14248-2	Oats	-	-	-	-	-	46.3	63.3	86.0	96.9	100.0	55
14248	Oats	-	-	-	-	-	42.1	64.4	94.7	99.7	100.0	62
14246-1,3	Wheat	-	-	-	-	-	51.4	70.5	95.2	99.7	100.0	42
14246-2	Wheat	-	-	-	-	-	55.9	71.2	90.5	98.5	100.0	34
14246	Wheat	-	-	-	-	-	52.2	70.6	94.4	99.5	100.0	40

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 24. SWR Samples							
14251s	Trays	0.21	0.34	1.6	14.2	25.7	34.1	54.9	92.3	99.8	100.0	79
14257	Barley	-	-	-	-	-	32.8	54.2	93.4	99.8	100.0	80
14254-2	Barley	-	-	-	-	-	33.4	50.3	89.7	99.3	100.0	87
14261	Oats	-	-	-	-	-	50.2	68.4	94.7	99.3	100.0	43
14253-2	Oats	-	-	-	-	-	77.7	87.2	98.9	100.0	-	21
14258	Rye	-	-	-	-	-	44.3	61.5	91.5	99.1	100.0	63
14255-2	Rye	-	-	-	-	-	44.4	62.6	91.8	98.4	100.0	61
14252-2	Wheat	-	-	-	-	-	52.1	69.1	92.9	100.0	-	38
14256	Wheat	-	-	-	-	-	47.5	67.2	95.0	99.7	100.0	51
					Set 25. P Samples							
14265s	Trays	0.43	0.70	2.2	9.4	19.7	37.96	92.6	98.6	99.5	100.0	55
14256-2	Squash	-	-	-	-	-	42.6	61.0	84.7	96.9	100.0	56
14266-1(1)	Squash	-	-	-	-	-	44.5	86.2	98.3	100.0	-	48
14266-1(2)	Squash	-	-	-	-	-	46.9	90.0	99.2	100.0	-	46
14266-1(3)	Squash	-	-	-	-	-	31.4	67.8	95.2	100.0	-	66
14266-1(4)	Squash	-	-	-	-	-	51.4	88.1	98.4	100.0	-	43
14266-1(5)	Squash	-	-	-	-	-	45.0	86.6	98.1	100.0	-	48
14266-1(6)	Squash	-	-	-	-	-	56.8	89.7	98.4	100.0	-	39
14266-1(7)	Squash	-	-	-	-	-	48.6	91.2	99.2	100.0	-	45
14266-1(8)	Squash	-	-	-	-	-	46.8	81.7	98.1	100.0	-	47
14266	Squash	-	-	-	-	-	45.6	84.1	97.5	99.9	100.0	47
14268	Cabbage	-	-	-	-	-	41.4	86.2	97.7	99.7	100.0	51

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 26. P Samples						
14271	Tray	0.41	0.58	1.6	14.5	28.3	40.6	71.4	99.7	100.0	-	60
14294	Beans	1.0	1.5	5.1	15.6	26.2	39.6	68.6	99.0	99.8	100.0	57
14295	Cabbage	0.72	1.2	3.5	16.2	27.8	38.9	70.1	99.4	100.0	-	61
14300-1	Corn	0.92	1.3	4.0	18.0	30.0	41.6	72.5	99.9	100.0	-	58
14300-2	Corn	1.0	1.5	5.1	19.3	31.4	42.6	73.3	98.6	99.9	100.0	55
14300-3	Corn	0.55	0.88	3.7	16.0	26.6	36.6	62.6	95.9	97.8	100.0	69
14300-4	Corn	2.1	2.9	6.5	24.0	38.0	50.5	81.3	99.7	100.0	-	43
14300	Corn	0.94	1.3	4.2	18.2	30.1	41.5	71.8	99.3	99.7	100.0	59
14296	Onions	-	-	-	-	-	37.9	64.4	95.8	99.2	100.0	66
14291-1	Squash	0.80	1.3	3.6	16.6	28.2	39.2	71.2	99.4	100.0	-	61
14292-2	Squash	1.7	2.3	3.8	11.6	18.0	25.1	50.8	93.5	99.5	100.0	87
14293-2*	Squash	0.75	1.2	3.0	10.0	18.0	29.2	57.7	95.4	99.6	100.0	75
14297	Tomato	0.88	1.4	4.3	16.3	26.7	37.7	67.7	97.9	99.8	100.0	63
14306	Barley	1.6	2.3	5.3	19.2	30.3	40.6	68.7	98.2	99.8	100.0	60
14305-2	Barley	1.4	2.1	5.6	20.3	31.4	41.0	64.7	97.8	99.9	100.0	63
14304	Oats	0.68	1.5	4.9	18.4	29.7	40.4	70.9	99.0	100.0	-	60
14303-2	Oats	0.0	0.84	8.4	26.9	41.3	53.4	82.8	99.8	100.0	-	39
14307-2	Rye	1.6	2.5	7.1	24.0	36.4	47.2	77.8	99.8	100.0	-	49
14302	Wheat	0.0	0.0	2.9	17.3	30.5	42.4	70.5	98.6	100.0	-	57
14301-2	Wheat	2.5	3.2	8.4	27.8	41.4	52.2	78.6	99.3	100.0	-	40

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 27. SW Samples						
14290s	Trays	0.31	0.50	1.6	16.2	30.0	41.2	72.3	99.8	100.0	-	59
14317	Beans	-	-	-	-	-	40.4	70.2	99.8	100.0	-	62
14318-1	Squash	-	-	-	-	-	38.1	71.6	99.2	100.0	-	60
14310-2	Barley	-	-	-	-	-	43.6	66.0	95.9	99.7	100.0	62
14315-2	Barley	-	-	-	-	-	43.5	67.8	96.8	96.5	99.7	59
14320-2	Barley	-	-	-	-	-	46.4	72.1	97.7	99.9	100.0	52
14309-2	Oats	-	-	-	-	-	54.7	82.6	99.8	100.0	-	38
14314-2	Oats	-	-	-	-	-	52.5	82.1	99.8	100.0	-	40
14311-2	Rye	-	-	-	-	-	44.4	74.6	99.6	100.0	-	54
14316-2	Rye	-	-	-	-	-	48.5	79.9	99.8	100.0	-	47
14308-2	Wheat	-	-	-	-	-	53.1	79.7	99.1	100.0	-	39
14313-2	Wheat	-	-	-	-	-	52.2	79.3	99.0	100.0	-	40
14319-2	Wheat	-	-	-	-	-	54.2	78.5	98.3	100.0	-	37
						Set 28. SW Samples						
14312s	Trays	0.33	0.50	1.5	14.7	28.8	41.1	72.5	99.8	100.0	-	58
14322	Beans	-	-	-	-	-	44.9	76.1	99.6	100.0	-	52
14323	Corn	-	-	-	-	-	38.5	65.4	97.1	99.8	100.0	65
14321-1	Squash	-	-	-	-	-	40.5	71.6	99.5	100.0	-	60
14327-2	Barley	1.9	2.5	6.8	23.3	35.7	46.2	71.1	97.1	99.9	100.0	52
14326-2	Oats	-	-	-	-	-	60.0	84.2	99.3	100.0	-	32
14328-2	Rye	-	-	-	-	-	48.3	76.0	99.4	100.0	-	48
14325	Wheat	-	-	-	-	-	56.4	80.8	98.9	100.0	-	35

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 29. SWR Samples							
1432's	Trays	0.32	0.48	1.5	14.8	28.8	41.1	72.5	99.7	99.9	100.0	58
14329	Cabbage	0.52	0.82	2.8	16.4	28.6	39.5	71.6	99.3	99.9	100.0	60
14330	Corn	-	-	-	-	-	43.7	72.2	97.9	99.9	100.0	56
14333-2	Barley	-	-	-	-	-	46.2	71.1	98.9	99.8	100.0	53
14332-2	Oats	-	-	-	-	-	67.0	87.4	99.5	100.0	-	26
14334-2	Rye	-	-	-	-	-	53.1	78.8	98.6	99.8	100.0	40
14331-2	Wheat	-	-	-	-	-	56.4	80.8	98.7	100.0	-	35
					Set 30. P Sample							
14335	Tray	0.34	0.63	1.5	16.4	30.0	39.2	61.6	92.9	100.0	-	66
14336	Squash	0.55	0.82	2.5	15.3	27.3	38.4	64.3	94.8	99.9	100.0	64
14343-1	Squash	-	-	-	-	-	45.0	69.7	98.3	100.0	-	55
14338-2	Wheat	-	-	-	-	-	56.1	79.5	98.6	100.0	-	35
					Set 31. SW Samples							
14344-1	Squash	-	-	-	-	-	46.9	71.6	97.4	100.0	-	51
14345-1	Squash	-	-	-	-	-	43.8	69.4	98.1	100.0	-	57
14339-2	Wheat	-	-	-	-	-	52.3	77.4	98.1	100.0	-	40
14340-2	Wheat	-	-	-	-	-	55.7	79.4	98.4	100.0	-	36
14341-2	Wheat	-	-	-	-	-	53.2	78.4	98.4	100.0	-	39
14342-2	Wheat	-	-	-	-	-	55.6	79.7	98.6	100.0	-	37

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 32. P Sample							
14352	Tray	0.32	0.48	1.5	15.3	27.3	39.4	66.6	98.8	100.0	-	63
14347	Beans	-	-	-	-	-	46.7	71.9	96.8	99.4	100.0	48
14348	Cabbage	0.55	0.82	2.8	14.4	25.0	35.3	64.7	96.8	99.8	100.0	67
14349	Cabbage	-	-	-	-	-	46.4	69.6	98.7	100.0	-	53
14346	Squash	-	-	-	-	-	44.4	71.4	97.9	99.9	100.0	55
14350-1	Squash	-	-	-	-	-	45.0	75.1	99.1	100.0	-	52
14351-1	Squash	-	-	-	-	-	44.0	75.3	99.1	100.0	-	54
					Set 33. P Samples							
14388	Tray	0.42	0.55	0.92	7.2	18.2	36.8	82.3	99.7	99.8	100.0	55
14402	Beans	-	-	-	-	-	39.5	79.9	98.2	99.5	100.0	53
14405	Beet	1.0	1.3	3.0	13.0	20.4	30.9	67.3	97.6	99.7	100.0	66
14406-1	Cabbage	0.84	1.5	4.3	13.2	23.3	37.4	73.5	98.4	99.9	100.0	58
14406-2	Cabbage	2.5	3.6	7.5	16.8	26.5	39.9	76.5	99.0	99.9	100.0	55
14406-3	Cabbage	-	-	-	-	-	35.8	63.4	96.6	99.7	100.0	66
14406	Cabbage	-	-	-	-	-	37.7	73.2	98.4	99.9	100.0	59
14404	Lettuce	0.35	0.63	4.3	13.8	21.2	31.5	67.3	96.2	99.4	100.0	66
14403	Onion	-	-	-	-	-	43.8	75.7	94.9	98.8	100.0	51
14399-1	Squash	1.0	1.5	4.8	14.7	26.4	43.0	83.8	99.6	99.9	100.0	50
14400-1	Squash	1.2	1.9	3.7	12.3	22.8	38.6	78.5	98.7	99.9	100.0	54
14409-2*	Squash	-	-	-	-	-	18.5	47.6	91.4	97.7	100.0	56
14401	Tomato	-	-	-	-	-	38.8	76.7	98.5	99.7	100.0	54
14395-1,3	Barley	0.86	1.4	4.3	20.6	34.0	44.7	70.6	96.9	99.8	100.0	54
14395-2	Barley	1.2	1.9	6.0	25.2	37.3	45.0	68.1	95.1	99.8	100.0	55

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 33. P Samples (continued)							
14395	Barley	0.95	1.5	4.8	21.8	34.9	44.8	69.9	96.4	99.8	100.0	54
14394-1,3	Oats	0.88	1.3	4.4	21.6	32.7	40.7	69.7	96.5	99.7	100.0	58
14394-2	Oats	-	-	-	-	-	58.5	88.8	9.80	99.1	100.0	38
14394	Oats	-	-	-	-	-	44.0	73.2	96.8	99.6	100.0	53
14397-1,3	Rye	-	-	-	-	-	51.4	87.4	98.2	99.3	100.0	42
14397-2	Rye	-	-	-	-	-	43.6	82.5	97.5	98.6	100.0	49
14397	Rye	-	-	-	-	-	46.0	84.0	97.7	98.8	100.0	47
14391-1,3	Wheat	2.5	2.9	1.4	32.3	45.8	54.3	80.1	97.9	99.7	100.0	31
14391-2	Wheat	-	-	-	-	-	55.1	83.4	98.7	99.6	100.0	39
14391	Wheat	-	-	-	-	-	54.6	81.3	98.2	99.7	100.0	38
					Set 34. SW Samples							
14388	Tray	0.50	0.65	1.2	8.1	19.1	36.9	81.4	95.7	99.8	100.0	55
14412	Beans	-	-	-	-	-	35.6	73.1	97.1	99.6	100.0	58
14414	Beet	0.64	1.1	3.4	16.2	24.0	35.5	73.7	98.4	99.8	100.0	59
14416	Lettuce	1.6	2.0	4.1	10.5	17.8	29.1	63.2	94.0	98.2	100.0	70
14415	Onion	-	-	-	-	-	32.7	59.4	91.8	98.2	100.0	71
14410-1	Squash	0.53	1.3	5.3	16.3	24.6	36.6	73.2	97.5	99.7	100.0	59
14411-1	Squash	1.6	2.9	6.2	14.5	23.8	40.4	78.9	97.3	99.9	100.0	52
14413	Tomato	-	-	-	-	-	37.0	75.3	97.9	99.5	100.0	57
14419-2	Barley	0.88	1.6	5.1	23.6	35.3	43.4	70.0	96.7	99.8	100.0	56
14418-2	Oats	1.1	1.8	4.2	24.2	44.8	65.3	90.9	98.3	99.4	100.0	33
14420-2	Rye	-	-	-	-	-	41.9	72.2	97.2	99.2	100.0	57
14417-2	Wheat	0.78	1.1	9.0	29.6	44.3	56.2	81.7	97.8	99.1	100.0	36

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 35. SW Samples							
14388	Tray	0.52	0.68	1.3	8.4	19.3	37.8	81.2	99.7	99.8	100.0	55
14424	Beans	-	-	-	-	-	40.4	82.3	98.5	99.4	100.0	51
14422-1	Squash	-	-	-	-	-	40.5	81.0	99.4	99.9	100.0	51
14423	Tomato	-	-	-	-	-	36.2	73.9	98.3	99.7	100.0	57
14426-2	Rye	-	-	-	-	-	39.2	73.5	96.6	98.3	100.0	56
14425-2	Wheat	-	-	-	-	-	57.7	83.3	98.2	99.6	100.0	36
					Set 36. SW Samples							
14388	Tray	0.72	0.94	2.1	10.7	21.6	37.9	79.1	99.7	99.8	100.0	56
14433	Onion	-	-	-	-	-	43.0	70.9	93.7	98.7	100.0	53
14431-1	Squash	2.0	3.1	10.8	20.5	28.3	42.2	79.4	98.9	99.9	100.0	52
14432	Tomato	-	-	-	-	-	31.1	66.4	98.1	99.9	100.0	66
14429-2	Barley	1.5	2.6	6.5	23.0	32.8	39.1	64.8	95.9	99.7	100.0	63
14428-2	Oats	-	-	-	-	-	65.5	87.6	96.6	98.5	100.0	31
14430-2	Rye	-	-	-	-	-	48.4	78.3	97.5	99.0	100.0	46
14427-2	Wheat	-	-	-	-	-	53.2	80.7	97.6	99.1	100.0	40
					Set 37. SW Samples							
14390s	Trays	0.0	1.2	2.8	12.7	23.5	37.6	77.2	99.7	99.8	100.0	58
14442-1	Squash	1.3	1.9	6.1	21.0	30.8	38.3	67.9	97.5	99.7	100.0	62
14438	Barley	1.1	1.5	4.4	20.7	33.1	42.4	65.7	96.5	99.9	100.0	60
14438-1,3	Barley	0.82	1.1	3.5	21.0	34.0	42.2	65.1	96.4	99.9	100.0	60
14438-2	Barley	2.0	3.0	7.7	19.5	30.0	43.1	67.6	96.7	99.7	100.0	54
14437-1,3	Oats	2.0	3.0	7.6	22.3	35.8	51.2	77.2	97.9	99.7	100.0	43

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 37. SW Samples (continued)							
14437-2	Oats	-	-	-	-	-	60.6	83.7	94.8	97.2	100.0	35
14437	Oats	-	-	-	-	-	52.3	78.0	97.5	99.4	100.0	40
14440-1,3	Rye	-	-	-	-	-	62.2	84.6	95.9	97.7	100.0	33
14440-2	Rye	-	-	-	-	-	57.2	82.6	97.6	99.5	100.0	36
14440	Rye	-	-	-	-	-	60.3	83.8	96.5	98.4	100.0	34
14434-1,3	Wheat	3.3	5.5	12.1	39.2	53.3	63.1	85.7	98.3	99.7	100.0	27
14434-2	Wheat	-	-	-	-	-	48.6	77.4	97.2	98.6	100.0	47
14434	Wheat	-	-	-	-	-	58.4	83.1	98.1	99.5	100.0	34
					Set 38. P Samples							
14390	Tray	1.3	1.7	4.4	17.3	28.0	38.2	72.9	99.8	99.9	100.0	57
14446	Beans	0.47	0.62	1.8	15.2	29.3	42.8	79.4	99.7	99.8	100.0	52
14450	Beet	-	-	-	-	-	48.1	74.7	95.7	98.6	100.0	60
14453-3	Cabbage	-	-	-	-	-	38.4	63.2	96.6	99.7	100.0	66
14453-2	Cabbage	-	-	-	-	-	42.5	69.2	94.4	98.5	100.0	56
14453-1	Cabbage	-	-	-	-	-	36.9	64.8	98.1	99.7	100.0	67
14453	Cabbage	-	-	-	-	-	37.5	65.0	97.7	99.6	100.0	66
14456-4	Corn	-	-	-	-	-	64.0	84.8	97.2	98.8	100.0	31
14456-3	Corn	1.6	2.2	4.3	15.4	25.2	34.7	64.2	96.7	99.8	100.0	68
14456-2	Corn	-	-	-	-	-	36.4	66.2	96.4	99.3	100.0	64
14456-1	Corn	-	-	-	-	-	64.0	84.8	97.2	98.8	100.0	31
14456	Corn	-	-	-	-	-	40.3	68.9	96.8	99.5	100.0	59
14452	Lettuce	-	-	-	-	-	32.2	58.5	92.8	97.5	100.0	75
14449	Onion	-	-	-	-	-	30.5	54.2	90.7	98.5	100.0	80
14448	Pepper	-	-	-	-	-	38.4	67.4	91.96	95.5	100.0	59

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 38. P Samples (continued)							
14444-2	Squash	-	-	-	-	-	11.8	34.8	86.1	98.3	100.0	108
14445-1	Squash	1.1	1.7	4.4	16.6	26.8	37.1	65.8	96.3	99.8	100.0	65
14451-2	Squash	-	-	-	-	-	19.8	42.2	85.9	97.7	100.0	102
14447	Tomato	-	-	-	-	-	35.5	61.6	94.0	98.7	100.0	70
					Set 39. SW Samples							
14390s	Tray	0.85	1.2	2.7	12.5	23.2	37.6	77.0	99.7	99.8	100.0	57
14462-2	Barley	1.9	2.5	6.9	24.3	36.0	44.1	66.5	95.4	99.6	100.0	57
14461-2	Oats	-	-	-	-	-	64.7	86.9	93.6	96.5	100.0	33
14463-2	Rye	-	-	-	-	-	55.3	79.5	96.4	98.4	100.0	38
14460-2	Wheat	-	-	-	-	-	58.8	83.2	98.6	99.9	100.0	34
					Set 40. SWR Samples							
14443s	Trays	0.70	0.91	2.2	12.4	24.1	37.6	76.1	99.8	99.9	100.0	59
14471	Barley	0.92	1.4	4.6	21.5	34.7	44.1	68.1	96.6	99.9	100.0	56
14466-2	Barley	1.1	1.6	4.9	19.6	31.2	40.8	65.2	95.1	99.7	100.0	62
14470	Oats	2.0	2.9	6.6	24.6	38.2	50.0	75.5	97.6	99.7	100.0	44
14465-2	Oats	-	-	-	-	-	64.6	84.6	97.9	99.6	100.0	28
14472	Rye	-	-	-	-	-	34.9	74.4	97.9	99.1	100.0	59
14467-2	Rye	-	-	-	-	-	44.5	72.8	92.8	96.2	100.0	51
14469	Wheat	2.2	3.7	11.9	35.4	47.6	55.2	80.1	98.1	99.5	100.0	34
14464-2	Wheat	3.0	4.4	11.1	32.6	48.2	59.4	83.3	98.5	99.6	100.0	32

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 41. P Samples							
14497	Tray	0.66	0.77	2.3	12.0	22.2	32.5	65.0	97.4	99.8	100.0	66
14515	Beets	-	-	-	-	-	37.0	67.8	97.8	99.0	100.0	64
14516	Carrots	-	-	-	-	-	33.3	66.7	97.6	100.0	-	66
14518	Corn	-	-	-	-	-	25.2	53.8	93.8	98.7	100.0	84
14517	Lettuce	-	-	-	-	-	26.7	55.2	93.6	98.8	100.0	81
14514	Onions	-	-	-	-	-	38.3	68.3	97.0	100.0	-	62
14519	Peas	-	-	-	-	-	20.7	56.6	92.6	97.8	100.0	79
14513	Peppers	-	-	-	-	-	34.6	71.6	96.1	99.1	100.0	59
14512-1	Squash	-	-	-	-	-	34.5	66.6	99.0	100.0	-	67
14521-2	Oats	-	-	-	-	-	52.7	83.0	93.3	96.0	100.0	42
14522-2	Rye	-	-	-	-	-	43.8	81.8	97.3	98.1	100.0	66
14520-2	Wheat	-	-	-	-	-	24.2	56.4	96.4	99.5	100.0	80
14524-1	Avocado	-	-	-	-	-	47.7	82.2	96.2	97.4	100.0	46
					Set 42. SW Samples							
14523s	Trays	0.69	0.93	2.6	11.4	20.0	30.4	66.5	97.9	99.8	100.0	58
14528	Beets	-	-	-	-	-	43.4	75.5	99.3	96.9	100.0	54
14531	Corn	-	-	-	-	-	34.96	58.5	90.2	99.5	100.0	73
14529	Lettuce	-	-	-	-	-	30.3	60.9	93.9	95.1	100.0	72
14527	Onions	-	-	-	-	-	45.8	70.6	94.2	99.6	100.0	52
14530	Peas	-	-	-	-	-	48.0	70.8	92.6	97.5	100.0	48
14526	Peppers	-	-	-	-	-	25.4	58.7	96.3	96.0	100.0	77
14525-1	Squash	-	-	-	-	-	36.0	70.2	97.8	99.3	100.0	63
14533-2	Oats	-	-	-	-	-	59.0	77.7	89.4	99.7	100.0	34

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns 3	5	10	20	30	44	88	175	295	>295	(microns)
					Set 42. SW Samples (continued)							
14534-2	Rye	-	-	-	-	-	35.3	73.8	94.3	95.9	100.0	57
14532-2	Wheat	-	-	-	-	-	45.9	78.0	97.6	98.6	100.0	50
14535-1	Avocado	-	-	-	-	-	54.0	80.4	95.7	96.9	100.0	40
					Set 43. P Samples							
14548	Tray	0.44	0.64	1.5	2.6	11.7	17.3	44.1	99.5	100.0	-	94
14539	Beets	-	-	-	-	-	31.5	61.6	98.3	99.1	100.0	74
14542	Corn	-	-	-	-	-	16.9	47.4	91.5	100.0	-	93
14540	Lettuce	-	-	-	-	-	28.4	61.6	97.8	99.1	100.0	75
14538	Onions	-	-	-	-	-	26.5	53.4	80.3	97.6	100.0	83
14541	Peas	-	-	-	-	-	45.3	73.4	96.4	98.4	100.0	51
14537	Peppers	-	-	-	-	-	23.4	49.3	93.6	98.3	100.0	90
14536-1	Squash	-	-	-	-	-	35.7	63.6	95.4	98.4	100.0	68
14544-2	Oats	-	-	-	-	-	55.2	72.7	87.9	92.1	100.0	37
14545-2	Rye	-	-	-	-	-	47.0	78.7	100.0	-	-	50
14543-2	Wheat	-	-	-	-	-	41.7	79.1	100.0	-	-	57
14546-1	Avocado	-	-	-	-	-	45.7	67.6	88.6	93.3	100.0	54
					Set 44. P Samples							
14547	Tray	0.47	0.64	1.7	11.2	22.5	35.5	74.6	99.8	99.97	100.0	61
14563	Beets	1.9	3.0	8.4	21.1	31.6	42.8	76.9	99.4	100.0	-	53
14564	Carrots	-	-	-	-	-	43.8	76.4	98.8	100.0	-	53
14566	Corn	-	-	-	-	-	28.5	60.3	96.0	100.0	-	74
14565	Lettuce	1.7	2.2	6.6	18.3	28.8	39.7	72.5	98.6	100.0	-	60

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 44. P Samples (continued)							
14562	Onions	-	-	-	-	-	47.3	82.4	100.0	-	-	50
14567	Peas	-	-	-	-	-	53.1	81.9	99.5	100.0	-	40
14561-1	Squash	1.3	2.1	5.7	18.3	29.2	39.7	74.8	99.3	100.0	-	57
14569	Rye	-	-	-	-	-	54.1	85.8	99.8	100.0	-	39
14568-2	Rye	-	-	-	-	-	51.8	83.6	100.0	-	-	41
14570-1	Avocado	-	-	-	-	-	51.4	81.0	100.0	-	-	42
					Set 45. P Samples							
14573	Tray	0.40	0.67	1.7	6.3	14.4	35.7	95.7	99.9	100.0	-	49
14592	Bean	-	-	-	-	-	44.0	80.9	97.9	97.2	100.0	50
14596	Beet	-	-	-	-	-	35.1	68.4	95.6	99.4	100.0	62
14602	Carrot	-	-	-	-	-	44.5	74.5	94.5	98.6	100.0	51
14600	Corn	-	-	-	-	-	17.3	40.6	91.2	99.1	100.0	102
14597	Lettuce	-	-	-	-	-	36.5	71.0	94.6	98.3	100.0	58
14595	Onion	-	-	-	-	-	45.2	69.9	93.3	97.9	100.0	52
14599	Pea	-	-	-	-	-	43.9	74.8	96.3	98.6	100.0	53
14594	Pepper	-	-	-	-	-	41.9	71.0	93.3	98.3	100.0	61
14598	Potato	-	-	-	-	-	45.3	77.9	97.0	99.6	100.0	50
14593	Radish	-	-	-	-	-	34.4	75.0	96.4	99.6	100.0	57
14603	Oats	-	-	-	-	-	38.5	68.9	88.2	93.2	100.0	57
14601-2	Rye	-	-	-	-	-	48.1	76.2	97.6	98.7	100.0	47

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 46. SW Samples							
14604	Bean	-	-	-	-	-	50.3	76.4	96.6	99.0	100.0	45
14606	Beet	-	-	-	-	-	40.8	64.8	93.96	99.1	100.0	63
14605	Radish	-	-	-	-	-	39.8	68.3	94.5	98.8	100.0	59
14607-2	Rye	-	-	-	-	-	37.3	66.0	96.7	98.6	100.0	65
					Set 47. S Samples							
14591	Tray	0.73	1.1	2.2	7.5	15.3	3.5	77.2	99.6	99.8	100.0	62
14615	Bean	-	-	-	-	-	54.7	78.9	89.7	95.5	100.0	40
14618	Beet	-	-	-	-	-	50.0	69.0	87.8	94.1	100.0	44
14619	Carrot	-	-	-	-	-	62.2	76.5	83.2	89.9	100.0	33
14621	Corn	-	-	-	-	-	23.2	48.0	92.1	98.2	100.0	92
14620	Lettuce	-	-	-	-	-	38.3	69.1	95.5	98.7	100.0	60
14617	Onion	-	-	-	-	-	55.5	72.7	85.2	92.2	100.0	37
14622	Pea	-	-	-	-	-	72.7	84.4	90.8	94.9	100.0	26
14616	Pepper	-	-	-	-	-	45.8	66.9	78.3	89.8	100.0	50
14614	Radish	-	-	-	-	-	41.9	66.5	90.4	97.1	100.0	59
14623	Oats	-	-	-	-	-	59.2	76.5	86.3	92.2	100.0	35
					Set 48. S Samples							
14591s	Trays	0.56	0.87	1.9	6.9	14.8	32.7	86.9	99.8	99.9	100.0	54
14624-1,3	Avocado	6.0	8.3	14.2	33.5	48.3	62.6	86.1	98.1	98.9	100.0	32

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	> 295	
					Set 49. P Sample							
14613	Tray	0.31	0.42	0.85	3.8	8.8	19.7	66.5	99.6	99.7	100.0	73
14632	Bean	-	-	-	-	-	47.6	77.0	94.7	97.0	100.0	46
14636	Beet	-	-	-	-	-	39.3	68.8	95.3	98.5	100.0	60
14637	Carrot	-	-	-	-	-	33.2	60.4	87.8	98.4	100.0	70
14631	Lettuce	2.6	3.1	4.3	12.0	20.4	32.5	65.0	96.2	99.2	100.0	66
14634	Onion	-	-	-	-	-	40.0	68.6	92.8	96.6	100.0	58
14630	Pea	-	-	-	-	-	56.2	82.9	96.6	98.2	100.0	38
14635	Pepper	-	-	-	-	-	45.0	74.7	93.7	95.3	100.0	50
14633	Radish	-	-	-	-	-	39.0	67.2	94.1	98.2	100.0	63
14638	Oats	-	-	-	-	-	50.7	78.0	92.5	95.9	100.0	43
14639-1,3	Rye	-	-	-	-	-	57.9	81.2	96.7	98.2	100.0	36
14639-2	Rye	-	-	-	-	-	42.0	71.3	94.4	96.6	100.0	55
14639	Rye	-	-	-	-	-	51.6	77.2	95.9	97.6	100.0	42
14641-1,3	Avocado	-	-	-	-	-	54.4	80.7	97.6	98.8	100.0	41
					Set 50. S Samples							
14648	Tray	0.62	0.97	2.5	7.6	14.8	28.7	74.0	99.0	99.7	100.0	63
14667	Bean	-	-	-	-	-	32.9	71.2	99.5	100.0	-	65
14663	Beet	-	-	-	-	-	28.3	63.1	97.0	99.6	100.0	72
14662	Carrot	-	-	-	-	-	31.1	63.8	94.6	99.0	100.0	70
14656	Corn	-	-	-	-	-	20.3	47.0	92.9	99.2	100.0	92
14657	Corn	-	-	-	-	-	18.6	49.2	92.5	99.1	100.0	91
14660	Lettuce	-	-	-	-	-	25.3	59.8	96.3	99.6	100.0	77
14661	Lettuce	-	-	-	-	-	20.9	54.0	94.9	99.3	100.0	83

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50}
		3	5	10	20	30	44	88	175	295	>295	(microns)
						Set 50. S Samples (continued)						
14664	Onion	-	-	-	-	-	28.4	58.7	90.7	94.4	100.0	74
14655	Pea	-	-	-	-	-	60.3	84.2	97.8	99.1	100.0	34
14658	Pea	-	-	-	-	-	47.7	71.4	94.2	99.1	100.0	50
14665	Pepper	-	-	-	-	-	27.6	66.3	96.3	98.8	100.0	68
14659	Potato	-	-	-	-	-	24.6	54.4	92.2	98.9	100.0	83
14666	Radish	-	-	-	-	-	30.3	63.4	95.8	99.3	100.0	70
14668	Oats	-	-	-	-	-	40.2	68.1	93.6	98.8	100.0	59
14670	Rye	-	-	-	-	-	48.5	75.8	98.6	99.6	100.0	47
14669-2	Rye	-	-	-	-	-	51.4	69.6	82.7	98.6	100.0	43
						Set 51. P Samples						
14689	Tray	0.62	0.97	2.3	12.4	22.2	31.4	66.9	99.7	99.9	100.0	69
14691	Bean	-	-	-	-	-	69.8	84.5	95.7	98.2	100.0	26
14696	Beet	-	-	-	-	-	64.3	81.9	94.7	97.8	100.0	29
14707	Cabbage	-	-	-	-	-	68.3	82.7	96.0	99.0	100.0	24
14695	Carrot	-	-	-	-	-	66.2	83.2	97.6	99.4	100.0	26
14699	Corn	3.0	4.3	9.4	28.2	40.4	48.7	69.8	94.4	98.8	100.0	47
14697	Lettuce	2.9	4.0	6.4	20.8	32.2	42.8	72.0	97.4	99.6	100.0	56
14694	Onion	-	-	-	-	-	38.0	62.0	85.5	92.9	100.0	64
14700	Pea	-	-	-	-	-	79.0	89.5	96.7	98.2	100.0	22
14701-2	Pea	-	-	-	-	-	59.4	70.8	81.3	89.6	100.0	31
14693	Pepper	-	-	-	-	-	60.2	79.7	94.7	97.6	100.0	32
14698	Potato	-	-	-	-	-	64.2	80.3	94.3	97.6	100.0	28
14692	Radish	-	-	-	-	-	48.6	71.8	96.0	99.0	100.0	47
14705	Barley	-	-	-	-	-	57.8	80.6	94.1	96.3	100.0	36
14703	Oats	-	-	-	-	-	53.5	74.2	89.9	95.2	100.0	40

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 51. P Samples (continued)							
14706-2	Rye	-	-	-	-	-	51.8	71.8	88.6	95.5	100.0	42
14704	Wheat	-	-	-	-	-	65.9	82.8	92.5	95.6	100.0	30
					Set 52. S Samples							
14690	Tray	0.42	0.60	1.9	9.4	17.2	25.5	57.3	97.8	100.0	-	79
14709	Bean	3.0	4.3	8.5	22.8	36.7	53.9	80.5	98.4	99.5	100.0	41
14710	Bean	3.2	4.4	8.3	28.8	44.0	56.4	81.3	97.6	99.4	100.0	36
14715	Beet	1.4	2.4	5.3	20.0	31.8	42.4	70.2	97.0	99.4	100.0	56
14721	Cabbage	-	-	-	-	-	41.4	67.6	95.1	98.3	100.0	60
14714	Carrot	-	-	-	-	-	54.8	78.2	96.5	98.7	100.0	37
14717	Corn	3.4	4.6	7.6	24.0	35.3	44.6	69.8	96.8	99.4	100.0	55
14716	Lettuce	1.0	1.4	2.2	12.8	23.5	34.9	71.7	97.9	99.8	100.0	61
14713	Onion	-	-	-	-	-	44.4	69.2	90.3	95.7	100.0	53
14712	Pepper	-	-	-	-	-	50.0	79.5	97.0	99.0	100.0	44
14711	Radish	1.7	2.4	5.7	20.0	30.8	40.7	68.5	97.9	99.6	100.0	60
14720	Barley	-	-	-	-	-	51.1	76.9	97.2	98.9	100.0	43
14718	Oats	-	-	-	-	-	46.0	74.3	96.4	98.8	100.0	51
14719	Wheat	-	-	-	-	-	55.3	74.6	87.4	93.9	100.0	38
					Set 53. S Samples							
14708s	Tray	0.42	0.62	1.9	8.9	16.5	25.7	60.9	98.2	100.0	-	75
14723	Bean	1.7	2.6	5.7	23.2	37.2	50.0	79.2	99.3	99.8	100.0	44
14724	Bean	2.5	4.3	11.9	33.4	48.2	60.3	84.5	90.6	99.5	100.0	32
14726	Cabbage	1.3	2.2	5.0	15.0	24.8	38.0	73.7	98.6	99.6	100.0	58

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>275	
					Set 53. S Samples (continued)							
14727	Onion	-	-	-	-	-	39.4	67.2	91.4	95.9	100.0	60
14725	Pepper	-	-	-	-	-	43.1	76.6	97.4	98.8	100.0	51
					Set 54. S Samples							
14722s	Trays	0.33	0.51	1.7	7.8	15.2	26.0	67.1	98.7	100.0	-	70
14729	Bean	1.7	2.6	5.8	19.7	36.2	58.1	90.8	98.8	99.5	100.0	39
14730	Bean	2.2	3.5	11.2	29.2	46.0	65.8	93.1	98.5	99.4	100.0	33
14733	Beet	1.4	2.4	5.3	17.7	33.2	55.3	91.0	98.9	99.6	100.0	41
14732	Cabbage	3.2	3.8	5.7	15.4	26.4	43.1	81.4	98.8	99.6	100.0	50
14736	Corn	1.1	1.9	6.6	17.5	29.8	44.7	77.7	97.7	99.7	100.0	50
14735	Lettuce	0.58	0.76	1.7	9.1	17.8	28.2	63.5	97.0	99.8	100.0	71
14734	Onion	-	-	-	-	-	46.5	75.7	90.8	95.0	100.0	48
14731	Pepper	-	-	-	-	-	47.0	83.5	96.5	98.9	100.0	46
14737-2	Wheat	-	-	-	-	-	55.3	83.5	94.8	97.6	100.0	40
					Set 55. P Samples							
14738	Tray	0.72	1.1	3.2	12.5	22.0	32.6	50.9	70.1	98.5	100.0	85
14753	Bean	2.3	3.6	7.3	29.7	47.4	62.2	80.5	92.6	99.7	100.0	32
14754	Bean	0.0	0.53	11.4	34.0	51.0	65.7	83.8	94.8	99.6	100.0	29
14758	Beet	3.0	4.5	8.6	24.0	36.7	49.6	69.3	87.4	99.5	100.0	45
14755	Cabbage	1.7	2.9	7.5	20.8	32.2	43.9	62.3	81.8	99.0	100.0	55
14759	Carrot	3.3	4.9	12.1	34.3	50.0	63.0	79.5	92.2	99.4	100.0	30
14762	Corn	1.2	1.7	4.6	16.3	27.7	41.1	64.0	84.3	99.4	100.0	57
14760	Lettuce	0.80	0.98	2.5	10.4	20.0	33.6	64.4	91.5	99.9	100.0	65

Table E-1 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 55. P. Samples (continued)							
14757	Onion	-	-	-	-	-	53.0	73.6	90.8	98.3	100.0	41
14763	Pea	-	-	-	-	-	58.4	76.8	90.7	99.0	100.0	34
14756	Pepper	2.0	3.6	10.0	27.0	40.8	53.7	73.7	89.3	99.4	100.0	39
14761	Potato	4.7	6.6	13.2	30.7	43.7	56.1	74.3	88.8	99.5	100.0	36
14764	Oats	2.6	3.3	6.2	21.0	35.0	49.1	71.4	89.4	99.1	100.0	45
14765	Wheat	-	-	-	-	-	60.3	79.9	92.0	99.0	100.0	33
14766-2	Wheat	-	-	-	-	-	60.4	80.4	91.9	99.0	100.0	35
					Set 56. SW Samples							
14751s	Trays	0.69	1.1	3.3	12.2	21.2	31.4	49.0	75.7	99.2	100.0	92
14768	Bean	4.7	6.0	11.5	41.8	61.7	76.9	91.0	97.4	99.6	100.0	23
14769	Bean	5.9	7.6	14.4	40.1	58.0	72.8	88.8	96.6	99.1	100.0	25
14772	Beet	7.0	8.4	11.8	34.4	51.2	65.4	83.6	95.8	99.3	100.0	29
14770	Cabbage	-	-	-	-	-	55.8	72.5	88.1	99.1	100.0	38
14773	Carrot	5.5	7.2	16.6	43.8	60.7	74.1	88.5	96.6	99.5	100.0	23
14776	Corn	2.3	3.2	5.6	18.3	29.8	41.6	60.6	83.9	99.4	100.0	59
14774	Lettuce	1.1	1.7	3.0	10.6	17.4	24.4	50.9	88.5	99.4	100.0	87
14781	Onion	-	-	-	-	-	58.5	77.0	93.9	98.3	100.0	31
14777	Pea	6.2	7.8	14.6	35.8	51.0	64.5	82.1	96.2	99.9	100.0	29
14771	Pepper	5.0	6.2	10.6	28.4	43.2	57.7	81.2	95.1	98.2	100.0	36
14775	Potato	5.0	7.8	12.6	29.7	42.6	55.3	75.0	93.1	99.6	100.0	37
14778	Oats	-	-	-	-	-	54.0	78.8	94.0	99.2	100.0	41
14780-2	Wheat	-	-	-	-	-	70.6	84.1	92.6	96.2	100.0	26
14779	Wheat	-	-	-	-	-	74.3	88.0	94.8	97.5	100.0	27

Table E-1 (concluded)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 57, SWR Samples							
14767s	Trays	0.69	1.1	3.3	12.1	21.1	31.2	48.9	75.8	99.1	100.0	92
14783-1	Bean	0.73	1.2	5.4	36.0	58.5	74.1	87.3	97.4	99.8	100.0	25
14784	Bean	-	-	-	-	-	56.2	73.9	94.4	99.4	100.0	32
14788	Beet	0.35	0.5	3.9	20.8	33.7	42.6	62.8	92.2	99.1	100.0	62
14785	Cabbage	-	-	-	-	-	34.9	54.7	87.5	99.1	100.0	79
14795	Carrot	-	-	-	-	-	32.8	55.7	89.3	98.2	100.0	79
14790	Corn	0.85	1.2	1.9	13.0	24.0	33.7	54.7	85.0	99.0	100.0	78
14789	Lettuce	0.35	0.55	1.2	5.8	12.0	20.3	52.0	93.6	99.5	100.0	85
14791	Pea	-	-	-	-	-	62.3	76.5	93.7	98.9	100.0	28
14787	Pepper	-	-	-	-	-	45.2	66.6	90.5	99.3	100.0	51
14792	Oats	-	-	-	-	-	51.5	76.6	95.2	98.8	100.0	42
14793	Wheat	-	-	-	-	-	58.5	76.3	94.2	97.3	100.0	32
14794-2	Wheat	-	-	-	-	-	50.6	69.6	85.1	91.1	100.0	43

Table E-2

SUMMARY OF CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS
FOR SAMPLES FROM PLOT NO. 2

(Accumulated Weight Distribution in Percent)

Sample Number	Type	Particle Diameter in Microns										d_{50}
		3	5	10	20	30	44	88	175	295	>295	(microns)
						Set 1. P Samples						
06003	Tray	0.46	0.50	1.4	15.0	28.3	38.6	63.5	98.2	100.0	-	67
06016	Bean	0.79	1.6	3.9	19.7	31.6	40.0	64.4	98.5	100.0	-	64
06015	Cabbage	1.5	2.0	5.6	18.3	27.7	36.3	59.3	97.4	100.0	-	72
06014	Corn	0.79	1.3	4.0	17.6	28.3	37.3	62.3	97.5	100.0	-	68
06017	Squash	0.84	1.6	4.7	19.0	29.6	37.7	62.5	98.4	100.0	-	69
06018	Tomato	1.5	2.1	5.6	19.2	28.8	35.8	59.9	98.0	99.8	100.0	73
06021	Barley	0.80	1.5	5.3	22.5	34.0	41.4	65.3	98.6	100.0	-	62
06020	Oats	1.0	1.8	5.2	22.5	33.5	40.5	63.6	98.6	99.9	100.0	66
06022	Rye	1.4	1.8	3.0	21.0	33.5	41.6	64.1	98.3	99.9	100.0	64
06019	Wheat	0.80	1.6	4.8	20.7	32.0	40.0	64.5	98.4	99.9	100.0	65
						Set 2. SW Samples						
06003	Tray	0.46	0.50	1.4	15.0	28.3	38.6	63.5	98.2	100.0	-	67
06027	Bean	2.0	4.6	8.2	27.3	38.8	46.0	68.8	98.7	100.0	-	55
06030	Corn	2.5	3.5	5.9	18.2	27.0	33.4	55.2	94.7	99.4	100.0	78
06026	Squash	1.4	2.0	5.9	22.5	34.2	43.1	68.8	98.2	99.7	100.0	58
06029	Tomato	-	-	-	-	-	28.9	55.6	92.8	98.5	100.0	79
06032	Barley	1.9	3.1	6.7	24.5	37.2	46.3	69.0	96.9	99.9	100.0	53

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 2. SW Samples (continued)							
06031	Oats	-	-	-	-	-	50.8	75.9	98.4	99.7	100.0	42
06034	Rye	0.74	1.3	4.8	22.0	34.3	43.0	66.9	98.3	99.9	100.0	60
06033	Wheat	-	-	-	-	-	49.8	74.6	98.7	100.0	-	45
					Set 3. SWR Samples							
06003	Tray	0.46	0.50	1.4	15.0	28.3	38.6	63.5	98.2	100.0	-	67
06039-1	Bean	-	-	-	-	-	29.8	55.7	94.2	99.6	100.0	79
06040-1	Bean	-	-	-	-	-	17.2	42.7	89.8	99.0	100.0	98
06042	Corn	-	-	-	-	-	17.5	42.9	85.7	97.7	100.0	98
06043	Corn	-	-	-	-	-	29.6	54.6	93.4	99.3	100.0	81
06038	Squash	-	-	-	-	-	18.1	44.8	91.0	99.3	100.0	95
06041	Tomato	-	-	-	-	-	15.7	40.8	86.2	97.4	100.0	10[illegible]
06035	Barley	-	-	-	-	-	28.0	55.2	94.0	99.4	100.0	80
06034A	Oats	-	-	-	-	-	35.1	60.4	93.3	99.2	100.0	71
06037	Rye	-	-	-	-	-	38.6	63.7	95.9	100.0	-	65
06036	Wheat	-	-	-	-	-	35.4	64.4	95.7	100.0	-	66
					Set 4. P Samples							
06055	Tray	0.32	0.55	1.4	8.3	18.3	33.2	64.8	89.1	99.9	100.0	64
06058	Beans	1.2	2.0	5.7	16.0	26.4	41.0	70.6	92.4	99.4	100.0	54
06064	Cabbage	1.5	2.4	7.0	17.6	27.4	39.6	66.5	89.0	99.6	100.0	68
06059	Corn	1.4	2.3	5.5	13.8	22.8	34.9	63.6	89.3	98.9	100.0	64

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 4. P Samples (continued)						
06061	Onion	-	-	-	-	-	37.9	71.8	94.6	99.5	100.0	57
06057	Squash	-	-	-	-	-	39.4	68.9	89.6	99.7	100.0	56
06060	Tomato	-	-	-	-	-	37.0	68.2	91.4	99.6	100.0	59
06066	Barley	0.63	0.87	3.6	12.7	23.2	37.1	66.4	90.1	99.0	100.0	60
06065	Oats	-	-	-	-	-	40.0	68.2	94.2	99.5	100.0	57
06063	Rye	-	-	-	-	-	40.9	68.1	92.0	98.9	100.0	56
06062	Wheat	0.65	0.98	3.8	13.3	24.0	38.7	69.5	92.7	99.3	100.0	68
						Set 5. SWR Samples						
06072	Beans	1.5	2.0	6.6	17.5	27.7	39.1	67.9	94.0	99.4	100.0	59
06071	Corn	-	-	-	-	-	25.0	51.0	87.3	97.0	100.0	86
06073	Squash	1.2	1.7	3.8	13.0	22.8	35.9	63.4	92.2	98.6	100.0	63
06067	Barley	-	-	-	-	-	45.7	74.4	93.5	99.6	100.0	49
06068	Oats	-	-	-	-	-	42.9	71.9	94.1	99.5	100.0	53
06069	Rye	-	-	-	-	-	39.0	67.2	91.4	99.0	100.0	58
06070	Wheat	-	-	-	-	-	37.0	67.1	94.2	99.4	100.0	60
						Set 6. SWR Samples						
06056s	Tray	0.31	0.52	1.4	8.2	17.3	30.3	60.5	88.9	99.2	100.0	70
06078	Bean	0.35	0.55	1.2	5.6	11.7	20.8	46.9	88.3	98.0	100.0	94
06074	Barley	-	-	-	-	-	41.7	66.9	92.3	98.8	100.0	56
06075	Oats	0.88	1.2	3.7	16.7	29.2	41.6	65.2	92.4	99.0	100.0	58
06076	Rye	2.4	2.8	5.7	14.7	24.0	35.8	63.1	91.7	98.4	100.0	64
06077	Wheat	-	-	-	-	-	23.7	49.0	89.1	97.7	100.0	90

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 7. P Samples							
06092	Tray	0.18	0.33	1.5	10.3	20.0	30.1	63.3	98.6	99.7	100.0	81
06111	Beets	-	-	-	-	-	59.6	80.9	96.0	100.0	-	34
06109	Cabbage	0.55	1.1	4.7	17.6	30.0	44.1	71.2	98.2	99.6	100.0	51
06112	Carrots	-	-	-	-	-	60.1	85.8	97.5	99.6	100.0	35
06113	Lettuce	1.4	2.3	5.9	17.4	26.8	37.0	62.6	92.1	98.0	100.0	66
06110	Onions	-	-	-	-	-	54.7	73.5	93.5	100.0	-	34
					Set 8. P Samples							
06107	Tray	0.10	0.16	0.35	5.8	13.2	19.0	40.8	92.4	99.7	100.0	102
06117	Beets	-	-	-	-	-	30.8	49.1	93.7	99.6	100.0	90
06118	Cabbage	0.48	0.75	1.9	9.8	17.0	22.7	44.6	93.7	99.8	100.0	95
06115	Carrots	2.0	3.3	5.4	14.2	20.0	24.1	42.8	91.9	99.2	100.0	100
06121	Corn	0.40	0.80	2.4	9.2	15.3	21.8	43.7	89.6	98.0	100.0	98
06114	Lettuce	0.68	1.1	3.1	11.6	18.6	25.6	47.9	91.8	99.4	100.0	92
06116	Onions	-	-	-	-	-	47.6	70.9	97.3	99.3	100.0	50
06119-1	Squash	0.79	1.1	2.5	10.9	18.2	24.7	44.8	92.8	99.7	100.0	96
06120-2*	Squash	-	-	-	-	-	32.6	58.8	92.8	99.6	100.0	74
06126	Barley	0.65	1.3	3.7	14.9	24.4	33.2	59.4	94.7	99.4	100.0	74
06124-2	Barley	3.2	4.2	6.3	19.0	28.5	37.1	59.8	92.5	98.4	100.0	71
06125	Oats	1.1	1.9	4.8	19.0	30.0	40.0	63.0	95.5	99.5	100.0	65
06123-2	Oats	-	-	-	-	-	54.8	75.9	98.2	99.9	100.0	35
06128	Rye	-	-	-	-	-	29.8	53.3	94.2	99.8	100.0	83
06127	Wheat	1.5	2.4	4.8	23.6	37.2	46.8	69.8	97.7	99.8	100.0	53
06122-2	Wheat	-	-	-	-	-	54.3	76.2	97.0	99.1	100.0	37

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 9. P Samples							
06129	Tray	0.07	0.13	0.98	11.3	22.8	32.8	59.9	97.6	100.0	-	75
06136	Beets	1.1	1.9	5.3	18.6	29.2	38.6	65.9	98.4	100.0	-	65
06139	Cabbage	0.54	1.0	2.9	14.7	25.4	35.9	63.2	97.7	99.99	100.0	69
06138	Carrots	1.5	2.5	5.8	19.8	30.3	39.4	65.6	97.7	99.9	100.0	65
06145	Corn	0.45	0.85	3.1	12.7	22.4	35.5	61.2	95.99	99.4	100.0	72
06134	Lettuce	0.58	0.97	3.5	15.7	26.1	35.6	62.4	96.9	99.8	100.0	70
06137	Onions	-	-	-	-	-	49.1	75.8	98.4	99.4	100.0	46
06140-1	Squash	0.35	0.72	3.5	16.1	26.8	37.3	62.9	97.3	100.0	-	68
06143	Barley	0.55	0.95	3.0	16.7	28.6	38.7	66.8	97.4	99.8	100.0	63
06132-2	Barley	1.7	2.2	4.9	17.6	27.7	37.3	64.0	95.6	99.5	100.0	67
06142	Oats	0.82	1.1	3.4	16.3	27.6	38.6	66.9	97.8	99.9	100.0	63
06131-2	Oats	2.0	3.8	10.4	29.0	41.3	51.9	77.0	99.2	99.9	100.0	41
06144-1	Rye	1.3	1.7	3.2	15.6	26.5	37.5	64.1	97.3	99.9	100.0	67
06133-2	Rye	0.52	1.1	4.9	21.6	34.4	45.0	71.3	98.0	99.7	100.0	54
06141	Wheat	0.73	1.1	3.3	18.4	31.3	41.2	67.3	98.5	99.9	100.0	61
06130-2	Wheat	-	-	-	-	-	45.5	71.8	98.3	99.9	100.0	53
					Set 10. SW Samples							
06135s	Trays	0.09	0.15	1.0	11.8	24.1	34.6	62.2	97.8	100.0	-	71
06154	Beet	-	-	-	-	-	57.4	80.9	98.0	99.0	100.0	34
06155	Cabbage	-	-	-	-	-	38.8	66.0	98.0	100.0	-	64
06152	Carrots	3.5	5.5	10.1	30.5	44.0	54.1	77.9	98.7	99.8	100.0	37
06162	Corn	0.62	1.1	3.7	18.2	29.3	37.6	59.1	91.8	98.1	100.0	71
06151	Lettuce	0.70	1.4	4.3	18.3	29.5	39.0	64.5	97.2	99.9	100.0	65
06153	Onions	-	-	-	-	-	58.0	76.8	95.5	98.7	100.0	32

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 10. SW Samples (continued)							
06156-1	Squash	0.65	1.4	4.3	20.7	34.0	44.9	70.5	98.5	100.0	-	55
06157-2	Squash	2.8	4.1	7.0	18.9	28.8	38.9	67.2	98.1	99.9	100.0	63
06158-2*	Squash	0.45	0.86	3.9	18.3	30.3	40.5	66.7	98.3	99.8	100.0	63
06159	Barley	0.73	1.5	4.1	22.0	36.2	47.0	71.8	97.2	99.6	100.0	50
06148-2	Barley	0.75	1.3	3.3	14.1	23.6	32.6	56.8	98.7	98.8	100.0	77
06161	Oats	0.75	1.4	5.4	26.2	42.6	55.7	79.7	97.2	98.9	100.0	37
06150-2	Oats	-	-	-	-	-	71.9	86.1	97.1	99.2	100.0	23
06147-2	Rye	-	-	-	-	-	52.9	76.7	97.5	99.6	100.0	38
06160	Wheat	0.52	1.4	5.2	24.8	40.4	53.3	79.6	98.5	99.8	100.0	39
06149	Wheat	-	-	-	-	-	54.7	77.7	97.8	99.6	100.0	36
					Set. 11. P Samples							
06146	Tray	0.10	0.24	1.1	9.3	19.6	35.0	62.5	96.8	100.0	-	71
06165	Cabbage	1.0	2.1	6.5	24.2	37.3	48.0	71.8	97.4	100.0	-	48
06167	Carrots	0.95	1.7	5.8	24.4	37.8	47.8	69.2	97.0	99.7	100.0	51
06168	Corn	0.28	0.58	2.2	11.7	20.7	29.0	51.3	89.9	97.7	100.0	86
06166	Lettuce	3.0	4.5	8.4	24.0	35.4	45.1	68.8	95.8	99.5	100.0	55
06164-1	Squash	1.5	2.8	6.8	23.8	36.3	46.9	71.3	97.2	100.0	-	51
					Set 12. S Samples							
06146s	Tray	0.07	0.16	1.1	11.7	23.6	34.5	62.1	97.4	99.7	100.0	71
06169-2	Barley	1.3	2.4	6.0	18.7	28.3	36.8	61.3	94.1	99.1	100.0	70
06171-2	Oats	-	-	-	-	-	60.2	78.4	97.4	99.4	100.0	29
06170-2	Wheat	-	-	-	-	-	47.9	74.0	97.3	99.5	100.0	48

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 13. 2P Samples							
06146s	Trays	0.21	0.32	1.2	11.4	22.4	34.2	58.2	90.0	98.7	100.0	74
06174	Beets	0.17	0.43	2.9	16.8	29.1	38.6	61.3	91.9	99.2	100.0	68
06176	Cabbage	0.55	1.0	3.4	16.8	28.2	38.6	62.6	93.9	99.5	100.0	67
06173	Carrots	0.54	1.3	4.7	18.0	23.8	38.1	60.3	90.7	98.9	100.0	68
06181	Corn	0.25	0.45	2.1	12.5	22.4	30.8	53.9	89.9	98.6	100.0	82
06172	Lettuce	0.70	1.2	3.2	15.2	25.6	34.9	59.1	92.6	99.1	100.0	73
06175	Onions	-	-	-	-	-	48.5	75.9	96.5	99.3	100.0	46
06177-1	Squash	1.0	1.2	3.8	16.7	27.3	37.5	62.0	91.9	99.2	100.0	68
06180-2	Barley	0.24	0.45	2.6	15.4	27.3	38.8	64.0	94.1	99.0	100.0	65
06179-2	Oats	-	-	-	-	-	42.0	69.3	94.9	99.0	100.0	57
06182-2	Rye	0.35	0.66	3.3	20.3	25.2	47.2	71.7	96.4	99.5	100.0	50
06178-2	Wheat	-	-	-	-	-	47.3	74.3	96.8	99.7	100.0	49
					Set 14. SWR Samples							
06163s	Trays	0.21	0.32	1.2	11.4	22.4	34.2	58.2	90.0	98.7	100.0	74
06188-1	Squash	-	-	-	-	-	44.6	66.8	99.2	99.2	100.0	56
06186-2	Barley	-	-	-	-	-	36.2	62.2	92.3	98.3	100.0	69
06191	Barley	-	-	-	-	-	36.2	63.7	94.8	99.0	100.0	67
06190	Oats	0.58	0.96	2.8	15.4	27.6	39.4	67.2	94.6	98.3	100.0	61
06185-2	Oats	-	-	-	-	-	61.5	78.1	93.8	100.0	-	29
06187-2	Rye	-	-	-	-	-	39.2	61.4	89.7	97.0	100.0	66
06184-2	Wheat	-	-	-	-	-	47.6	73.6	96.5	99.4	100.0	48
06189	Wheat	-	-	-	-	-	42.3	69.8	95.3	99.5	100.0	56

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 15. P Samples						
06194	Tray	0.44	0.56	1.5	11.5	22.0	31.7	55.5	93.9	99.2	100.0	79
06219	Bean	1.0	1.7	6.5	20.4	30.7	39.6	64.2	97.6	99.7	100.0	65
06215	Beet	0.58	1.1	4.4	16.8	26.7	34.9	57.4	94.2	99.2	100.0	75
06217	Cabbage	-	-	-	-	-	35.0	60.1	96.1	99.7	100.0	73
06214	Carrots	0.83	1.3	4.7	17.8	27.6	34.7	55.2	93.9	99.2	100.0	79
06213	Lettuce	-	-	-	-	-	33.1	56.1	93.4	98.7	100.0	78
06216	Onions	0.04	0.15	2.0	15.3	27.3	36.3	58.8	96.3	99.8	100.0	73
06218-1	Squash	0.86	1.4	4.5	15.3	24.1	32.6	58.5	94.7	99.4	100.0	74
06225	Barley	1.5	2.3	6.3	23.2	25.6	46.3	71.9	97.2	99.6	100.0	51
06222-2	Barley	1.0	1.6	5.5	21.0	33.0	42.8	67.6	96.3	99.5	100.0	59
06227-2	Oats	0.53	0.89	4.2	19.7	31.7	40.8	65.9	98.1	100.0	-	64
06221-2	Oats	1.9	3.1	8.0	23.2	33.8	42.7	66.7	98.0	100.0	-	59
06224	Rye	0.35	0.60	3.6	18.3	20.5	40.6	66.2	98.3	100.0	-	63
06223-2	Rye	-	-	-	-	-	43.8	69.5	98.4	100.0	-	56
06226	Wheat	0.15	0.32	4.4	21.8	36.4	49.1	75.4	98.3	99.9	100.0	45
06220-2	Wheat	1.4	1.9	6.5	24.2	37.7	49.5	76.9	98.6	100.0	-	45
						Set 16. SW Samples						
06228s	Trays	0.42	0.62	1.5	11.7	22.3	31.7	56.4	94.3	99.2	100.0	78
06233	Bean	-	-	-	-	-	46.6	72.3	98.4	100.0	-	51
06231	Beet	-	-	-	-	-	36.7	61.5	93.7	99.1	100.0	70
06230	Carrots	-	-	-	-	-	34.6	58.0	92.5	98.8	100.0	74
06229	Lettuce	-	-	-	-	-	35.6	60.4	92.8	98.3	100.0	71
06232	Onions	-	-	-	-	-	39.3	63.1	95.8	100.0	-	66

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50}
		3	5	10	20	30	44	88	175	295	>295	(microns)
					Set 16. SW Samples (continued)							
06234-1	Squash	-	-	-	-	-	39.4	61.5	96.4	99.2	100.0	69
06237-2	Barley	-	-	-	-	-	45.1	71.3	97.0	99.7	100.0	53
06236-2	Oats	-	-	-	-	-	47.4	71.1	98.7	100.0	-	51
06238-2	Rye	-	-	-	-	-	46.7	72.3	98.6	100.0	-	51
06235-2	Wheat	-	-	-	-	-	53.0	80.0	99.2	100.0	-	40
					Set 17. SWR Samples							
06228s	Trays	0.42	0.62	1.5	11.7	22.3	31.7	56.4	94.3	99.2	100.0	78
06244	Bean	-	-	-	-	-	46.9	71.4	96.8	99.3	100.0	51
06242	Beet	-	-	-	-	-	40.7	65.6	94.3	99.3	100.0	62
06246	Cabbage	-	-	-	-	-	41.9	67.2	97.4	99.9	100.0	60
06241	Carrots	-	-	-	-	-	52.1	76.3	97.0	99.6	100.0	41
06240	Lettuce	-	-	-	-	-	41.6	66.6	94.8	99.0	100.0	60
06243	Onions	-	-	-	-	-	50.5	73.4	98.1	100.0	-	43
06245-1	Squash	-	-	-	-	-	39.3	64.1	96.8	99.7	100.0	66
06249-2	Barley	-	-	-	-	-	43.3	70.0	96.5	99.7	100.0	57
06256-1,3	Barley	-	-	-	-	-	46.8	72.7	96.9	99.1	100.0	50
06256-2	Barley	-	-	-	-	-	42.1	69.0	96.4	99.6	100.0	58
06256	Barley	-	-	-	-	-	45.1	71.3	96.7	99.3	100.0	53
06248-2	Oats	-	-	-	-	-	60.5	81.8	98.7	100.0	-	30
06254-1,3	Oats	-	-	-	-	-	46.6	72.9	97.5	99.6	100.0	50
06254-2	Oats	-	-	-	-	-	77.4	90.9	99.6	100.0	-	21
06254	Oats						48.4	73.9	97.6	99.6	100.0	46
06250-2	Rye	-		-	-	-	51.9	77.1	98.7	100.0		40
06258-1,3	Rye	-	-	-	-	-	71.4	92.9	99.7	100.0	-	28

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 17. SWR Samples (continued)						
06258-2	Rye	-	-	-	-	-	50.2	78.4	99.0	100.0	-	44
06258	Rye						60.1	85.2	98.9	100.0	-	33
06247-2	Wheat	-	-	-	-	-	52.8	79.8	98.9	100.0	-	40
06252-1,3	Wheat	-	-	-	-	-	52.2	78.5	98.2	99.8	100.0	41
06252-2	Wheat	-	-	-	-	-	52.8	80.0	99.0	100.0	-	40
06252	Wheat						52.4	78.9	98.1	99.8	100.0	40
						Set 18. P Samples						
06259	Tray	0.64	0.76	2.0	13.4	26.7	41.2	76.3	99.4	100.0	-	55
06270	Beet	-	-	-	-	-	43.1	78.2	99.4	99.9	100.0	53
06269	Carrots	-	-	-	-	-	43.2	75.3	98.9	99.8	100.0	54
06267-4	Corn	-	-	-	-	-	55.0	85.9	99.7	100.0	-	38
06267-1	Corn	-	-	-	-	-	45.6	82.3	99.8	100.0	-	49
06267-2,3	Corn	-	-	-	-	-	41.3	67.4	96.5	99.3	100.0	61
06267	Corn						45.3	79.9	99.2	99.9	100.0	49
06268	Lettuce	-	-	-	-	-	41.9	75.5	98.8	99.7	100.0	55
06271	Onions	-	-	-	-	-	38.6	72.2	96.9	99.3	100.0	58
06277-1,3	Barley	-	-	-	-	-	45.4	73.0	97.6	99.6	100.0	52
06277-2	Barley	-	-	-	-	-	42.8	71.0	97.3	99.7	100.0	56
06277	Barley	-	-	-	-	-	44.3	72.1	97.5	99.6	100.0	54
06273-1,3	Oats	-	-	-	-	-	52.2	80.2	99.5	100.0	-	41
06273-2	Oats	-	-	-	-	-	55.3	88.5	100.0	-	-	37
06273	Oats						52.7	81.5	99.6	100.0	-	40

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 18. P Samples (continued)							
06279-1,3	Rye	-	-	-	-	-	54.2	83.3	99.7	100.0	-	38
06279-2	Rye	-	-	-	-	-	48.9	79.0	99.6	100.0	-	46
06279	Rye						51.8	81.4	99.6	100.0	-	41
06275-1,3	Wheat	-	-	-	-	-	59.3	84.4	99.4	100.0	-	33
06275-2	Wheat	-	-	-	-	-	53.0	82.1	99.4	100.0	-	39
06275	Wheat	-	-	-	-	-	57.4	83.7	99.4	100.0	-	35
					Set 19. P Samples							
06319	Tray	1.2	1.6	4.1	12.7	23.2	38.8	89.4	99.0	99.8	100.0	55
06334	Bean	-	-	-	-	-	39.4	81.2	97.6	100.0	-	54
06332	Corn	-	-	-	-	-	22.8	61.0	93.3	99.3	100.0	73
06333	Peas	-	-	-	-	-	34.7	92.5	99.2	100.0	-	54
06337-2	Oats	-	-	-	-	-	36.7	88.7	100.0	-	-	54
06336-2	Rye	-	-	-	-	-	43.4	80.3	98.3	100.0	-	49
06338-2	Wheat	-	-	-	-	-	42.4	80.4	98.0	100.0	-	50
06339-1	Camphor	-	-	-	-	-	42.7	91.6	97.8	100.0	-	49
					Set 20. P Samples							
06335	Tray	1.1	1.9	4.3	13.3	23.3	37.4	75.1	98.8	99.9	100.0	57
06348	Bean	-	-	-	-	-	30.1	61.0	92.0	99.0	100.0	70
06349	Corn	-	-	-	-	-	29.8	58.8	92.3	99.7	100.0	73
06350	Peas	-	-	-	-	-	47.7	81.0	97.3	100.0	-	46
06352	Rye	-	-	-	-	-	57.4	87.8	99.1	100.0	-	38
06351-2	Rye	-	-	-	-	-	54.8	85.3	98.2	100.0	-	40
06353-1	Camphor	-	-	-	-	-	60.5	90.3	100.0	-	-	35

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 21. S Samples						
06356	Tray	0.66	1.0	2.3	9.3	19.2	35.4	82.8	99.7	99.9	100.0	55
06376	Bean	-	-	-	-	-	52.7	82.3	97.8	96.3	100.0	41
06375	Bean	-	-	-	-	-	48.4	84.6	97.3	98.4	100.0	45
06373	Corn	-	-	-	-	-	27.0	56.0	90.7	98.6	100.0	79
06372	Pea	-	-	-	-	-	47.5	84.0	97.5	98.9	100.0	46
06374	Potato	0.74	0.76	0.77	9.7	25.3	46.4	80.2	96.2	99.6	100.0	47
06377	Radish	-	-	-	-	-	42.8	76.4	96.2	98.4	100.0	50
06379	Rye	-	-	-	-	-	62.8	87.8	96.8	98.6	100.0	34
06378-2	Rye	-	-	-	-	-	55.0	83.1	95.4	97.8	100.0	40
06381-1,3	Camphor	-	-	-	-	-	64.5	87.8	96.9	98.3	100.0	33
06382-1,3	Camphor	-	-	-	-	-	56.8	84.3	93.2	96.6	100.0	39
06383-1,3	Camphor	-	-	-	-	-	59.1	84.8	94.2	97.1	100.0	37
						Set 22. P Samples						
06380	Tray	0.37	0.68	1.9	6.8	14.0	26.4	74.7	99.8	99.[illegible]	100.0	65
06391	Bean	-	-	-	-	-	48.4	85.1	98.4	99.5	100.0	45
06392	Bean	-	-	-	-	-	44.8	85.8	98 5	99.5	100.0	47
06387-1	Corn	2.1	2.8	4.5	13.2	23.0	37.8	82.1	98.2	99.5	100.0	56
06387-3	Corn	-	-	-	-	-	19.3	45.9	90.0	99.2	100.0	94
06387	Corn	-	-	-	-	-	29.6	66.0	94.5	99.4	100.0	66
06388	Corn	-	-	-	-	-	31.1	72.3	95.1	99.0	100.0	60
06386	Pea	-	-	-	-	-	44.0	82.9	97.5	99.2	100.0	49
06384	Pea	-	-	-	-	-	40.0	85.2	95.8	98.0	100.0	52
06389	Pepper	-	-	-	-		41.5	82.7	97.8	98.9	100.0	50
06385	Potato	3.7	5.7	9.8	19.8	29.7	43.1	84.1	98.8	99.4	100.0	52

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 22. P Samples (continued)							
06390	Radish	-	-	-	-	-	33.6	78.6	98.4	99.7	100.0	56
06394	Rye	-	-	-	-	-	52.4	81.9	99.0	99.6	100.0	41
06393-2	Rye	-	-	-	-	-	51.2	83.1	98.7	99.8	100.0	43
06395-1,3	Camphor	-	-	-	-	-	50.8	87.0	99.0	99.7	100.0	43
06396-1,3	Camphor	-	-	-	-	-	58.8	87.6	98.3	99.2	100.0	37
06397-1,3	Camphor	-	-	-	-	-	58.5	87.3	97.8	99.2	100.0	37
					Set 23. SW Samples							
06398s	Trays	0.54	0.90	2.4	8.0	15.8	29.0	76.6	99.7	99.9	100.0	62
06400	Bean	-	-	-	-	-	47.8	81.0	97.0	99.2	100.0	46
06399	Bean	-	-	-	-	-	50.0	88.5	97.9	99.0	100.0	44
06406	Corn	-	-	-	-	-	39.6	73.9	96.1	98.4	100.0	55
06405	Pea	-	-	-	-	-	60.7	86.6	97.5	98.9	100.0	35
06404	Pea	-	-	-	-	-	60.4	89.3	97.1	99.3	100.0	37
06402	Pepper	-	-	-	-	-	49.7	87.5	98.6	99.4	100.0	45
06403	Potato	-	-	-	-	-	56.3	90.5	99.3	99.7	100.0	39
06401	Radish	-	-	-	-	-	41.5	80.8	97.7	99.1	100.0	51
06403	Rye	-	-	-	-	-	61.8	88.4	98.2	99.3	100.0	34
06407-2	Rye	-	-	-	-	-	59.1	85.2	98.0	99.2	100.0	36
					Set 24. P Samples							
06418	Tray	0.35	0.66	2.1	5.9	10.6	21.3	70.0	99.6	99.7	100.0	70
06426	Bean	-	-	-	-	-	50.0	74.9	91.6	99.3	100.0	44

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 24. P Samples (continued)							
06425	Bean	-	-	-	-	-	45.2	76.5	97.4	99.2	100.0	50
06420	Corn	-	-	-	-	-	28.8	59.8	93.0	99.4	100.0	74
06419	Pea	-	-	-	-	-	46.7	80.1	98.9	99.6	100.0	48
06421	Pea	-	-	-	-	-	33.7	72.8	97.8	99.0	100.0	61
06423	Pepper	-	-	-	-	-	37.7	57.7	96.7	98.6	100.0	62
06422	Potato	-	-	-	-	-	37.1	72.9	97.1	99.4	100.0	58
06424	Radish	-	-	-	-	-	37.3	54.4	87.8	99.3	100.0	78
06427	Barley	-	-	-	-	-	28.4	40.0	93.7	98.4	100.0	107
06428-2	Rye	-	-	-	-	-	46.6	62.8	97.9	99.3	100.0	60
06429-1,3	Camphor	-	-	-	-	-	56.3	84.9	93.0	99.2	100.0	40
06430-1,3	Camphor	-	-	-	-	-	62.5	87.8	94.8	98.8	100.0	36
					Set 25. OR Samples							
06432-1,3	Camphor	-	-	-	-	-	65.7	87.6	94.3	97.1	100.0	34
06433-1,3	Camphor	-	-	-	-	-	80.6	88.9	92.4	96.5	100.0	21
06434-1,3	Camphor	-	-	-	-	-	72.0	85.6	91.5	95.8	100.0	25
06435-2	Rye	-	-	-	-	-	51.8	83.6	98.3	99.3	100.0	42
06436	Rye	-	-	-	-	-	66.7	91.4	98.2	99.3	100.0	35
					Set 26. P Samples							
06431	Tray	0.75	1.0	2.1	9.2	19.5	36.0	81.1	99.7	99.9	100.0	56
06444	Bean	-	-	-	-	-	49.4	81.4	97.8	98.7	100.0	45
06443	Bean	-	-	-	-	-	35.5	71.7	94.0	98.2	100.0	58
06442	Carrot	-	-	-	-	-	24.9	62.6	92.1	98.1	100.0	71

Table E-2 (continued)

Sample Number	Type	Particle Diameter In Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 26. P Samples (continued)						
06439	Corn	-	-	-	-	-	22.0	53.1	92.7	99.1	100.0	83
06438	Pea	-	-	-	-	-	39.2	80.1	97.5	99.6	100.0	53
06440	Pea	-	-	-	-	-	25.9	69.4	93.5	98.2	100.0	67
06441	Potato	-	-	-	-	-	25.9	56.7	88.4	99.6	100.0	77
06445	Radish	-	-	-	-	-	33.7	71.2	95.3	98.8	100.0	60
06446	Barley	-	-	-	-	-	21.8	55.1	91.8	99.2	100.0	80
06448	Rye	-	-	-	-	-	54.1	84.4	98.4	99.3	100.0	40
06447-2	Rye	-	-	-	-	-	46.2	80.6	98.4	99.5	100.0	48
06449-1,3	Camphor	-	-	-	-	-	53.8	86.7	98.3	100.0	-	41
06450-1,3	Camphor	-	-	-	-	-	49.7	87.9	98.7	99.4	100.0	44
						Set 27. SW Samples						
06437s	Trays	0.74	1.0	2.1	8.3	17.5	33.3	82.3	99.8	100.0	-	57
06457	Bean	-	-	-	-	-	49.8	81.7	96.6	98.6	100.0	44
06456	Bean	-	-	-	-	-	40.9	73.3	91.7	96.4	100.0	53
06454	Carrot	-	-	-	-	-	35.6	71.0	92.7	98.0	100.0	59
06451	Pea						57.0	84.6	95.8	98.1	100.0	38
06452	Pea	-	-	-	-	-	42.3	79.3	93.4	97.1	100.0	50
06453	Potato	-	-	-	-	-	30.7	59.9	88.5	97.3	100.0	71
06455	Radish	-	-	-	-	-	31.4	63.5	90.8	97.8	100.0	67
06458	Barley	-	-	-	-	-	32.4	65.1	90.3	97.3	100.0	64
06459-2	Rye	-	-	-	-	-	46.1	81.7	97.7	99.0	100.0	47
06470-1,3	Camphor	-	-	-	-	-	55.4	88.4	97.4	98.1	100.0	40
06471-1,3	Camphor	-	-	-	-	-	55.9	84.1	93.8	97.9	100.0	40

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 28. S Samples							
06460	Tray	0.34	0.47	0.95	4.1	13.0	41.1	97.4	99.7	99.9	100.0	48
06467	Bean	-	-	-	-	-	47.3	76.8	94.1	98.5	100.0	47
06465	Carrot	-	-	-	-	-	33.6	65.5	93.8	99.4	100.0	64
06462	Corn	-	-	-	-	-	34.0	68.2	95.3	99.0	100.0	62
06461	Pea	-	-	-	-	-	52.6	85.0	96.8	98.3	100.0	42
06463	Pea	-	-	-	-	-	41.8	74.2	92.4	97.3	100.0	52
06464	Potato	-	-	-	-	-	44.0	81.5	94.9	99.0	100.0	48
06466	Radish	-	-	-	-	-	39.9	72.8	95.8	99.3	100.0	55
06468	Barley	-	-	-	-	-	25.9	62.6	90.6	96.5	100.0	70
06469-2	Rye	-	-	-	-	-	50.3	82.6	98.0	99.3	100.0	44
					Set 29. P Samples							
06475	Tray	0.36	0.64	2.1	9.7	18.1	27.4	58.5	98.6	100.0	-	78
06499	Bean	0.51	0.86	2.7	15.8	31.2	47.3	78.5	97.9	99.9	100.0	47
06501	Bean	-	-	-	-	-	57.0	83.7	93.8	96.4	100.0	36
06500	Cabbage	-	-	-	-	-	48.8	73.6	93.4	97.9	100.0	46
06496	Carrot	-	-	-	-	-	61.6	85.1	96.7	98.9	100.0	33
06492-1	Corn	3.5	5.1	11.2	33.2	51.5	69.1	91.8	99.1	99.7	100.0	29
06492-3	Corn	1.4	2.2	5.0	11.8	18.7	28.1	61.7	95.8	99.7	100.0	73
06492-4	Corn	-	-	-	-	-	64.8	88.2	98.1	99.0	100.0	33
06492	Corn	-	-	-	-	-	39.1	69.7	96.6	99.7	100.0	60
06493	Corn	0.77	1.2	3.0	9.2	15.5	23.6	53.9	94.8	99.7	100.0	83
06494	Pea	-	-	-	-	-	51.2	74.4	97.5	99.5	100.0	42
06497	Pepper	-	-	-	-	-	43.9	71.9	92.5	97.6	100.0	52

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 29. P Samples (continued)						
06495	Potato	-	-	-	-	-	27.8	67.3	98.1	99.7	100.0	68
06498	Radish	1.6	2.5	5.6	17.8	29.4	42.8	73.7	97.2	99.4	100.0	54
06503	Oats	-	-	-	-	-	34.5	70.5	97.7	99.3	100.0	62
06502	Wheat	-	-	-	-	-	50.1	78.8	95.6	97.7	100.0	44
						Set 30. 2P Samples						
06504s	Trays	0.38	0.70	1.9	8.2	15.3	24.0	56.5	98.5	99.9	100.0	80
06512	Bean	6.5	7.9	10.5	23.0	34.3	48.9	80.7	97.8	99.3	100.0	45
06513	Bean	-	-	-	-	-	55.2	82.1	97.2	98.0	100.0	38
06514	Cabbage	-	-	-	-	-	52.4	69.2	90.2	95.5	100.0	38
06510	Carrot	-	-	-	-	-	60.7	87.0	98.4	99.6	100.0	33
06506	Corn	2.6	3.9	8.4	18.8	27.4	36.1	62.9	96.8	99.6	100.0	69
06507	Pea	-	-	-	-	-	47.3	71.6	95.2	98.7	100.0	48
06508	Potato	3.4	4.8	10.4	29.2	42.7	54.3	80.7	98.7	99.7	100.0	38
06509	Potato	0.55	0.99	5.9	24.9	40.2	53.9	79.8	98.6	99.6	100.0	40
06511	Radish	2.1	3.4	8.0	23.2	35.3	47.8	77.0	98.7	99.8	100.0	47
06516	Oats	-	-	-	-	-	42.6	73.7	98.2	99.6	100.0	55
06515	Wheat	-	-	-	-	-	46.4	78.0	96.8	98.7	100.0	48
06517-1,3	Camphor	-	-	-	-	-	6.90	87.8	97.3	98.9	100.0	27
06518-1,3	Camphor	-	-	-	-	-	73.4	87.2	93.6	97.0	100.0	24
						Set 31. P Samples						
06520	Tray	0.44	0.67	1.7	6.8	14.2	26.7	66.3	97.0	99.9	100.0	68
06528	Bean	3.0	3.7	5.5	16.8	28.9	44.3	78.8	97.6	99.7	100.0	50

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 31. P Samples (continued)							
06526	Bean	-	-	-	-	-	48.0	76.99	96.6	98.9	100.0	47
06527	Cabbage	-	-	-	-	-	37.8	73.9	96.5	99.5	100.0	56
06530	Carrot	-	-	-	-	-	41.2	76.9	97.0	99.4	100.0	53
06525-1,4	Corn	1.3	2.2	4.2	13.0	24.0	40.8	81.0	98.2	99.9	100.0	51
06525-3	Corn	0.76	1.2	3.0	9.7	17.4	28.3	62.7	96.7	99.9	100.0	71
06525	Corn	1.1	1.8	3.8	11.8	21.6	36.2	74.2	97.6	99.9	100.0	58
06524	Corn	0.70	1.1	2.8	8.5	15.7	27.3	63.7	96.5	99.8	100.0	71
06533-2	Pea	-	-	-	-	-	47.6	80.3	91.5	96.2	100.0	46
06523	Pea	2.2	2.8	4.6	11.7	20.5	35.1	75.5	97.6	99.7	100.0	57
06531	Potato	2.0	3.3	6.7	16.0	25.5	38.6	72.6	96.7	99.7	100.0	57
06532	Potato	2.0	2.6	4.3	12.6	22.3	36.0	71.7	97.1	99.7	100.0	60
06529	Radish	2.0	3.0	5.7	15.5	25.6	38.4	70.6	97.2	99.9	100.0	57
06536	Barley	2.8	3.5	4.8	14.2	24.7	39.3	74.9	97.8	99.6	100.0	56
06537	Barley	1.1	1.7	4.3	13.3	23.3	37.5	72.8	97.3	99.6	100.0	58
06535	Oats	-	-	-	-	-	38.4	72.1	96.6	98.3	100.0	58
06538-2	Rye	-	-	-	-	-	52.2	81.4	96.5	98.1	100.0	42
06539	Rye	-	-	-	-	-	51.3	82.2	97.6	99.3	100.0	43
06534	Wheat	-	-	-	-	-	35.0	74.4	97.8	99.6	100.0	58
					Set 32. P Samples							
06520s	Trays	0.52	0.80	1.7	6.9	15.2	26.6	63.9	97.3	99.9	100.0	71
06540-1,3	Camphor	-	-	-	-	-	53.5	77.8	96.2	99.0	100.0	40
06541-1,3	Camphor	-	-	-	-	-	56.6	82.7	97.4	99.2	100.0	37

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 33. SW Samples						
06522s	Trays	0.43	0.67	1.7	6.5	13.4	25.7	67.1	97.8	99.9	100.0	69
06552	Bean	1.8	2.8	5.6	17.7	30.6	47.0	80.8	98.3	99.5	100.0	47
06551	Bean	-	-	-	-	-	42.3	77.9	93.8	97.1	100.0	50
06549	Cabbage	-	-	-	-	-	42.2	72.9	93.5	97.8	100.0	53
06550	Carrot	-	-	-	-	-	47.5	80.1	95.2	98.3	100.0	46
06545	Corn	0.74	1.1	2.8	10.2	18.3	28.7	62.6	97.2	99.7	100.0	72
06546	Corn	1.5	2.3	4.1	13.6	23.3	34.7	67.3	96.9	99.4	100.0	64
06544-2	Pea	-	-	-	-	-	40.8	73.4	92.3	96.8	100.0	53
06543	Pea	8.3	9.4	12.2	22.8	33.6	48.3	82.8	98.1	99.5	100.0	45
06547	Potato	2.2	3.1	6.3	16.3	27.4	43.5	80.4	98.0	99.4	100.0	50
06548	Potato	2.0	3.2	6.3	16.6	27.1	41.3	74.5	97.0	98.4	100.0	54
06560	Radish	1.8	2.7	5.4	13.8	23.3	36.6	72.3	97.3	99.7	100.0	59
06555	Barley	1.1	1.9	4.3	13.5	24.0	39.3	78.0	98.5	99.8	100.0	54
06554	Oats	1.6	2.2	5.1	14.0	23.5	37.0	72.5	97.5	99.2	100.0	58
06556-2	Rye	-	-	-	-	-	49.4	81.3	98.3	99.5	100.0	45
06553	Wheat	-	-	-	-	-	44.7	78.9	97.4	99.1	100.0	49
						Set 34. SW Samples						
06522s	Trays	0.43	0.68	1.7	6.6	13.5	25.5	65.1	97.9	100.0	-	71
06557-1,3	Camphor	-	-	-	-	-	61.9	84.1	95.2	98.3	100.0	33
06558-1,3	Camphor	-	-	-	-	-	62.4	84.96	96.1	98.1	100.0	50
						Set 35. P Samples						
06542	Tray	0.0	0.17	0.72	1.3	2.5	6.8	50.1	99.4	99.99	100.0	88
06585	Bean	-	-	-	-	-	23.6	61.6	98.3	99.1	100.0	76
06583	Bean	-	-	-	-	-	21.8	63.3	97.6	99.0	100.0	74

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 35. P Samples (continued)						
06580	Cabbage	-	-	-	-	-	14.3	55.1	97.0	98.8	100.0	83
06579	Carrot	-	-	-	-	-	23.5	60.0	95.0	96.3	100.0	75
06590	Barley	-	-	-	-	-	16.9	57.0	98.4	99.4	100.0	81
06589	Oats	-	-	-	-	-	17.4	62.8	98.0	99.3	100.0	75
06588	Wheat	-	-	-	-	-	19.6	61.4	98.0	99.3	100.0	74
						Set 36. S Samples						
06542s	Trays	0.15	0.42	1.2	3.7	7.4	15.4	57.8	98.7	99.9	100.0	82
06584	Bean	-	-	-	-	-	25.5	62.5	99.3	99.9	100.0	75
06582	Bean	-	-	-	-	-	24.3	64.7	99.0	99.5	100.0	72
06578	Carrot	-	-	-	-	-	20.8	61.2	98.7	99.6	100.0	77
06575-1	Corn	0.28	1.4	3.8	7.4	11.7	20.0	61.4	99.4	99.9	100.0	77
06575-3,4	Corn	-	-	-	-	-	23.8	59.6	97.1	99.3	100.0	76
06575	Corn	-	-	-	-	-	20.6	61.1	99.1	99.8	100.0	77
06576	Corn	0.52	1.3	3.1	7.5	12.6	41.7	60.8	98.1	98.9	100.0	77
06586-2	Pea	-	-	-	-	-	24.8	66.4	94.8	97.9	100.0	68
06587-2	Pea	-	-	-	-	-	23.1	64.3	97.5	99.1	100.0	72
06574	Pea	0.13	0.49	1.6	3.1	6.0	14.4	61.8	99.0	99.9	100.0	78
06577	Potato	0.72	1.1	2.3	6.7	12.3	21.2	58.9	98.9	99.9	100.0	78
06581	Radish	0.63	0.97	1.9	5.7	10.7	19.2	59.4	98.4	99.8	100.0	78
06591-2	Rye	-	-	-	-	-	35.4	72.3	97.6	98.9	100.0	60
06592	Camphor	-	-	-	-	-	32.8	72.2	95.0	97.5	100.0	60
06593	Camphor	-	-	-	-	-	22.4	58.2	98.2	99.4	100.0	50

Table E-2 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 37. P Samples							
06594	Tray	0.25	0.42	1.5	5.5	12.6	32.0	93.2	99.9	100.0	-	52
06610	Bean	-	-	-	-	-	50.5	90.3	98.7	99.5	100.0	43
06608	Carrot	1.8	3.0	6.0	13.7	23.4	42.8	84.7	97.7	99.4	100.0	48
06605-1,4	Corn	0.92	1.8	4.3	10.5	19.3	40.9	90.7	99.5	99.9	100.0	48
06605-3	Corn	1.7	2.5	4.6	10.5	17.2	28.1	64.5	96.2	99.8	100.0	69
06605	Corn	1.2	2.1	4.4	10.5	18.5	36.0	80.7	98.2	99.9	100.0	54
06614-2	Pea	-	-	-	-	-	38.0	83.8	93.0	96.6	100.0	50
06606	Pea	1.2	1.8	3.1	9.2	17.7	37.8	88.4	99.4	99.9	100.0	50
06607	Potato	1.1	2.0	4.8	11.7	20.8	41.1	91.5	99.2	99.7	100.0	48
06609	Radish	0.73	1.4	3.8	11.6	21.0	36.0	76.5	98.6	99.9	100.0	59
06613	Barley	-	-	-	-	-	39.4	70.8	91.6	96.5	100.0	55
06612	Oats	0.26	0.95	3.3	9.8	18.6	34.4	79.5	98.2	99.2	100.0	56
06611	Wheat	2.6	3.1	4.3	11.7	21.3	40.1	85.1	98.8	99.7	100.0	50
					Set 38. PW Samples							
06574	Tray	0.25	0.42	1.5	5.5	12.6	32.0	93.2	99.9	100.0	-	52
06626-1,4	Corn	1.5	2.1	4.9	15.4	28.8	51.2	90.8	99.4	99.7	100.0	43
06626-3	Corn	0.66	1.1	2.2	5.9	10.4	18.3	51.9	94.0	99.7	100.0	86
06626	Corn	0.99	1.5	3.3	9.6	17.6	31.1	67.1	96.1	99.7	100.0	65
06628	Pea	4.0	4.6	5.6	14.4	25.5	47.2	90.1	97.3	98.8	100.0	45
06627	Potato	1.2	1.9	3.8	10.4	19.6	40.7	88.5	98.3	99.5	100.0	48

Table E-2 (concluded)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 39. S Samples							
06604	Tray	0.06	0.12	0.68	4.4	12.6	35.7	93.1	99.6	99.9	100.0	50
06646	Bean	-	-	-	-	-	58.7	88.6	96.4	98.4	100.0	39
06645	Bean	-	-	-	-	-	63.9	93.7	97.6	98.8	100.0	38
06643	Cabbage	-	-	-	-	-	42.7	74.0	89.9	95.8	100.0	51
06642	Carrot	-	-	-	-	-	52.0	86.5	96.0	98.4	100.0	43
06638-1,4	Corn	2.7	3.0	3.7	15.2	28.8	45.4	84.9	98.1	99.4	100.0	46
06638-3	Corn	-	-	-	-	-	49.0	84.5	97.9	99.2	100.0	45
06638	Corn	-	-	-	-	-	38.9	72.4	97.2	99.7	100.0	57
06639	Corn	-	-	-	-	-	42.2	78.8	97.7	99.6	100.0	51
06640	Pea	-	-	-	-	-	34.1	87.9	96.7	98.7	100.0	57
06641	Potato	1.9	2.1	2.6	11.6	25.7	51.6	90.5	98.2	99.4	100.0	43
06644	Radish	2.2	2.7	4.3	14.3	25.6	42.3	80.0	98.1	99.6	100.0	51
06647	Squash	-	-	-	-	-	52.2	87.6	95.5	97.9	100.0	43
06651	Barley	-	-	-	-	-	42.7	82.2	96.98	98.7	100.0	50
06650	Oats	-	-	-	-	-	35.7	74.2	96.7	98.8	100.0	57
06648	Wheat	-	-	-	-	-	47.6	82.7	94.98	97.3	100.0	46
06649-2	Wheat	-	-	-	-	-	41.8	83.7	92.8	96.6	100.0	48

Table E-3

SUMMARY OF CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS
FOR SAMPLES FROM STATIONS 15 AND 16

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
						Set 1. S Samples						
15001	Tray	0.63	1.2	3.4	16.5	26.0	35.4	53.4	79.3	99.5	100.0	80
15021s-1	Laurel	1.3	2.0	6.2	34.8	55.7	71.5	91.4	98.9	99.4	100.0	27
15026s-1	Laurel	0.65	1.0	2.1	24.3	48.8	68.5	91.3	98.9	99.4	100.0	30
						Set 2. P Samples						
15016	Tray	0.43	0.66	1.7	9.3	19.0	32.5	70.6	98.6	99.9	100.0	63
15027-1	Laurel	-	-	-	-	-	51.7	76.7	93.3	97.2	100.0	42
15028-1	Laurel	-	-	-	-	-	52.3	77.2	91.2	95.3	100.0	42
15029-1	Laurel	-	-	-	-	-	57.6	79.5	90.0	94.2	100.0	37
15030-1	Laurel	-	-	-	-	-	55.4	80.2	93.3	95.8	100.0	39
15031-1	Laurel	-	-	-	-	-	57.9	81.4	93.1	96.7	100.0	37
15032-1	Laurel	-	-	-	-	-	56.6	82.6	94.5	97.2	100.0	39
15033-1	Laurel	-	-	-	-	-	58.9	85.1	98.1	99.1	100.0	36
15034-1	Laurel	-	-	-	-	-	52.6	76.5	90.6	94.4	100.0	41
15035-1	Laurel	-	-	-	-	-	57.1	80.5	94.1	96.8	100.0	37
						Set 3. P Samples						
15036	Tray	0.65	1.1	2.7	9.4	18.4	33.2	77.7	99.7	100.0	-	60
15043s-1	Laurel	-	-	-	-	-	56.9	74.8	90.9	98.3	100.0	35
15044s-1	Laurel	-	-	-	-	-	59.0	76.0	91.9	98.9	100.0	31

Table E-3 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
					Set 3. P Samples (continued)							
15045s-1	Laurel	-	-	-	-	-	61.2	81.0	93.7	98.1	100.0	32
15046s-1	Laurel	-	-	-	-	-	57.5	74.6	90.5	98.2	100.0	34
15047s-1	Laurel	-	-	-	-	-	52.6	70.0	88.7	97.5	100.0	39
15048-1	Laurel	-	-	-	-	-	49.9	69.4	88.2	98.3	100.0	44
15049-1	Laurel	-	-	-	-	-	65.0	82.0	94.5	98.9	100.0	27
					Set 4. 2P Samples							
15050s	Trays	0.62	0.94	2.3	8.3	16.3	29.1	74.4	99.7	100.0	-	64
15052-1	Laurel	-	-	-	-	-	76.2	92.7	97.5	98.5	100.0	23
15053-1	Laurel	-	-	-	-	-	68.3	88.3	95.2	97.1	100.0	31
15054-1	Laurel	-	-	-	-	-	55.1	80.6	95.2	98.5	100.0	39
15055-1	Laurel	-	-	-	-	-	58.3	83.1	95.5	97.6	100.0	36
15056-1	Laurel	-	-	-	-	-	66.9	85.7	93.0	95.7	100.0	30
15057-1	Laurel	-	-	-	-	-	43.7	73.5	94.7	98.5	100.0	51
15058-1	Laurel	0.53	0.84	4.3	19.3	23.3	46.9	73.7	94.8	99.5	100.0	48
15059-1	Laurel	-	-	-	-	-	44.8	72.7	93.6	99.7	100.0	51
15060-1	Laurel	-	-	-	-	-	49.0	76.5	96.7	99.4	100.0	45
15061-1	Laurel	-	-	-	-	-	45.0	72.8	94.5	99.2	100.0	50
15068s-1	Laurel	-	-	-	-	-	50.3	76.8	94.7	98.4	100.0	44
15075s-1	Laurel	-	-	-	-	-	50.6	76.4	94.1	98.4	100.0	43
15082s-1	Laurel	-	-	-	-	-	44.8	70.3	92.1	98.7	100.0	52
15089s-1	Laurel	-	-	-	-	-	45.0	70.7	92.1	98.0	100.0	52
15090-1	Laurel	1.1	1.7	5.6	23.3	39.0	53.4	79.5	96.6	99.9	100.0	40

Table E-3 (continued)

Sample Number	Type	Particle Diameter in Microns										d_{50}
		3	5	10	20	30	44	88	175	295	>295	(microns)
						Set 5. SW Samples						
15051s	Tray	0.59	0.95	2.4	8.4	16.0	28.5	72.7	99.2	99.9	100.0	64
15091-1	Laurel	1.8	2.9	7.6	28.0	43.6	56.5	81.0	97.0	99.8	100.0	36
						Set 6. S Samples						
15096	Tray	0.75	0.90	1.3	5.4	12.2	25.9	77.0	99.3	99.9	100.0	62
15106s-1	Laurel	2.6	6.5	17.6	39.5	55.7	71.7	93.0	99.4	99.8	100.0	26
						Set 6. P Samples						
16000	Tray	1.1	1.5	92.7	8.9	16.3	26.4	63.6	97.7	100.0	-	73
16006-1,3	Pine	-	-	-	-	-	81.5	92.7	98.7	99.6	100.0	20
16007-1,3	Pine	-	-	-	-	-	73.7	88.3	97.0	98.2	100.0	24
16008-1,3	Pine	-	-	-	-	-	75.3	89.6	98.8	99.6	100.0	22
16009-1,3	Pine	-	-	-	-	-	79.6	92.1	99.0	99.8	100.0	20
16010-1,3	Pine	8.8	10.1	21.4	48.6	63.2	73.7	90.8	99.3	99.9	100.0	21
16011-1,3	Pine	-	-	-	-	-	78.5	91.9	98.6	99.4	100.0	22
16012-1,3	Pine	-	-	-	-	-	79.3	92.3	99.2	99.8	100.0	21
16013-1,3	Pine	-	-	-	-	-	78.4	92.4	98.7	99.2	100.0	22
						Set 7. P Samples						
16027	Tray	0.88	1.0	1.2	5.3	11.7	23.8	70.0	99.5	100.0	-	69
16037s	Juniper	6.5	10.0	28.2	58.0	73.8	84.5	95.6	99.2	99.6	100.0	17
16166s-1	Grapefruit	5.7	7.3	10.9	27.0	42.2	59.5	85.6	95.8	98.6	100.0	36

Table E-3 (concluded)

Sample Number	Type	Particle Diameter in Microns										d_{50} (microns)
		3	5	10	20	30	44	88	175	295	>295	
Set 8. PW Samples												
16027	Tray	0.88	1.0	1.2	5.3	11.7	23.8	70.0	99.5	100.0	-	69
16184s-1	Grapefruit	7.5	9.2	13.2	30.7	47.0	65.6	90.8	98.0	98.8	100.0	32
16229s-1	Grapefruit	-	-	-	-	-	57.3	83.1	94.1	97.7	100.0	38
Set 9. S Samples												
16027	Tray	0.88	1.0	1.2	5.3	11.7	23.8	70.0	99.5	100.0	-	69
16045s-1	Pine	2.6	6.5	17.6	39.5	55.7	71.7	93.0	99.4	99.8	100.0	26
Set 10. SW Samples												
16028s	Trays	1.1	1.2	1.5	5.7	12.0	24.3	70.9	99.5	99.9	100.0	68
16288s-1	Grapefruit	6.3	7.8	12.7	32.3	48.1	63.8	87.3	97.0	98.3	100.0	32

Table E-4

SUMMARY OF CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS
FOR ORIGINAL, BACKGROUND, AND GRAIN REWASH SAMPLES

Sample Number	Sample Type	Date	Particle Diameter in Microns										d_{50}
			3	5	10	20	30	44	88	175	295	>295	(microns)
						Original Samples							
14036	Bean	6/16	-	-	-	-	-	44.2	68.7	98.1	99.9	100.0	57
14038	Corn	6/16	0.95	1.6	4.4	18.4	28.8	35.8	56.8	92.3	99.5	100.0	75
14035	Squash	6/16	-	-	-	-	-	39.9	62.9	97.0	99.9	100.0	67
14037	Tomato	6/16	1.6	2.4	5.8	21.0	31.5	38.0	58.6	92.5	99.7	100.0	72
14XXX/06XXX	Grains	7/13-7/16	-	-	-	-	-	32.3	59.7	91.6	98.5	100.0	72
06080	Barley	7/16	0.92	1.2	4.9	24.5	37.6	45.0	63.6	95.4	99.6	100.0	59
06082	Rye	7/16	1.1	1.8	4.6	12.8	22.4	38.0	67.6	96.3	99.3	100.0	63
06083	Wheat	7/16	-	-	-	-	-	33.2	60.8	94.0	98.7	100.0	73
14361	Corn	10/3	-	-	-	-	-	31.2	59.6	95.6	99.8	100.0	75
14576-1	Avocado	12/1	-	-	-	-	-	58.5	85.9	99.2	99.7	100.0	36
14577-1	Avocado	12/1	-	-	-	-	-	56.0	79.4	98.0	99.0	100.0	36
06367-1	Camphor	12/1	-	-	-	-	-	71.0	91.6	99.5	99.9	100.0	27
06368-1	Camphor	12/1	-	-	-	-	-	66.4	87.5	98.6	99.5	100.0	28
06369-1	Camphor	12/1	-	-	-	-	-	75.1	91.7	98.0	99.1	100.0	29
06370	Camphor	12/1	-	-	-	-	-	78.9	94.5	99.4	99.7	100.0	24
06XXX	Mixed	1/6-1/15	0.84	2.3	6.4	21.3	34.6	48.4	69.6	88.7	99.7	100.0	46
14XXX	Mixed	1/6-1/15	2.1	3.0	8.3	25.7	41.2	57.5	80.1	98.8	99.8	100.0	37
06633-2	Rye	1/11	-	-	-	-	-	49.0	84.5	97.9	99.2	100.0	45
06636	Carrot	1/11	1.4	2.4	4.9	15.0	26.5	42.8	80.6	98.7	99.7	100.0	51
15011s-1	Laurel	1/13	1.6	2.8	6.8	24.6	41.3	58.0	88.7	99.7	100.0	-	37
14XXX	Mixed	2/8-2/23	1.2	2.4	6.7	32.8	53.6	71.3	87.8	98.5	99.8	100.0	28

Table E-4 (continued)

Sample Number	Sample Type	Date	Particle Diameter in Microns										d_{50} (microns)
			3	5	10	20	30	44	88	175	295	>295	
Original Samples (continued)													
06XXX	Mixed	2/8-2/23	0.85	1.8	5.3	16.2	27.8	43.7	78.5	98.1	99.9	100.0	51
16001	Pine	2/8	6.8	8.8	21.8	53.4	68.3	76.5	91.2	99.5	99.9	100.0	18
06656	Corn	2/9	2.8	4.5	11.0	26.3	39.2	52.0	72.6	91.4	99.5	100.0	42
06655	Corn	2/9	0.16	0.84	2.2	7.1	12.8	21.0	42.6	79.5	99.3	100.0	106
Background Samples													
14002	Corn	6/15	-	-	-	-	-	17.4	36.3	78.1	98.5	100.0	113
14003	Squash	6/15	-	-	-	-	-	24.6	47.9	84.9	97.2	100.0	93
14XXX/06XXX	Mixed	7/13-7/21	-	-	-	-	-	40.3	60.9	90.7	99.0	100.0	66
14XXX/06XXX	Mixed	8/10-8/17	1.1	1.4	4.3	19.3	32.3	42.9	67.2	94.9	99.4	100.0	58
06260	Lettuce	9/6	-	-	-	-	-	46.2	68.2	96.1	100.0	-	54
06261	Onion	9/6	-	-	-	-	-	67.8	75.6	96.5	100.0	-	23
06262	Beet	9/6	-	-	-	-	-	36.3	58.5	91.5	98.5	100.0	72
06263	Carrot	9/6	-	-	-	-	-	31.4	54.2	90.6	98.5	100.0	82
06264	Corn	9/6	-	-	-	-	-	50.6	73.4	98.0	99.8	100.0	53
06264-1	Corn	9/6	-	-	-	-	-	64.1	82.5	98.3	99.7	100.0	27
06264-3	Corn	9/6	-	-	-	-	-	42.0	65.8	97.6	99.7	100.0	62
06264-4	Corn	9/6	-	-	-	-	-	48.0	75.0	98.3	100.0	-	48
14XXX	Mixed	10/3-10/12	-	-	-	-	-	45.3	70.2	95.6	99.4	100.0	53
06XXX	Mixed	10/3-10/12	-	-	-	-	-	39.0	61.9	95.4	99.5	100.0	64
14XXX/06XXX	Mixed	11/6-11/13	-	-	-	-	-	50.6	74.5	97.2	99.4	100.0	43
14XXX	1P	12/1-12/9	1.4	2.2	4.5	19.3	30.8	39.5	61.8	93.0	98.8	100.0	68
06XXX	Mixed	12/1-12/9	1.1	2.2	5.4	16.4	26.5	38.3	59.4	86.4	99.5	100.0	64
14643	Avocado	12/4	-	-	-	-	-	57.5	83.4	97.7	98.6	100.0	36

Table E-4 (continued)

Sample Number	Sample Type	Date	Particle Diameter in Microns										d_{50} (microns)
			3	5	10	20	30	44	88	175	295	>295	
Background Samples (concluded)													
14644	Avocado	12/4	-	-	-	-	-	57.7	78.4	91.0	95.3	100.0	36
14XXX	Mixed	1/6-1/16	1.2	2.1	5.0	19.4	31.2	42.4	71.4	97.3	99.8	100.0	56
06521	Potato	1/7	-	-	-	-	-	48.8	75.0	95.1	98.6	100.0	45
06615	Corn	1/11	0.78	1.1	2.2	7.0	13.1	23.4	62.7	97.2	99.7	100.0	73
15031-1	Laurel	1/15	-	-	-	-	-	64.9	88.1	96.5	98.0	100.0	33
16002/16003	Pine	2/8	7.4	9.8	23.6	53.2	68.2	78.8	92.4	99.2	99.7	100.0	18
15068-1,3	Laurel	2/8	4.4	5.8	11.7	37.5	54.2	67.8	89.5	99.6	100.0	-	27
14XXX	Mixed	2/8-2/23	1.2	2.3	5.6	41.3	58.0	65.3	84.9	98.1	99.7	100.0	24
16015-1,3	Pine	2/9	8.4	11.4	24.0	53.2	67.6	77.2	93.0	99.5	99.8	100.0	18
16016-1,3	Pine	2/9	6.5	7.4	11.6	35.3	51.0	63.4	86.3	99.2	99.7	100.0	29
16022s-1	Grapefruit	2/13-2/16	8.1	10.7	20.8	50.6	65.3	76.0	91.4	99.0	99.8	100.0	20
16022s-1	Grapefruit	2/13	-	-	-	-	-	77.9	91.5	97.6	99.2	100.0	18
16026	Juniper	2/14	8.4	12.9	36.5	73.5	85.6	91.8	96.4	98.8	99.6	100.0	12
15083s	Laurel	2/19	8.4	12.4	24.7	49.8	64.6	76.1	89.3	95.1	98.6	100.0	20
Grain Rewash Samples													
14285/06209	Bkgs	9/2	-	-	-	-	-	49.9	75.4	97.5	99.7	100.0	44
14300/14313	P	9/3	-	-	-	-	-	43.3	67.2	96.4	99.8	100.0	59
14314/14334	SW	9/3	-	-	-	-	-	48.6	71.9	97.4	99.8	100.0	48
06237/06258	SWR	9/4	-	-	-	-	-	49.6	74.9	97.5	99.6	100.0	45
06220/06236	P	9/4	-	-	-	-	-	51.9	78.0	98.2	100.0	-	42
14XXX/06XXX	Bkgs	10/3-10/8	-	-	-	-	-	41.7	68.1	96.2	99.7	100.0	59
14XXX/06XXX	P	10/3-10/8	-	-	-	-	-	39.6	66.8	96.0	99.7	100.0	62
14XXX/06XXX	Mixed	11/6-11/13	-	-	-	-	-	44.9	78.3	97.2	99.4	100.0	49

Table E-4 (concluded)

Sample Number	Sample Type	Date	Particle Diameter in Microns										d_{50} (microns)
			3	5	10	20	30	44	88	175	295	295	
Grain Rewash Samples (concluded)													
14579/06257	OR	12/1	-	-	-	-	-	39.1	75.4	97.8	99.4	100.0	56
06407/06428	P	12/7	-	-	-	-	-	34.8	69.9	94.4	97.2	100.0	60
14652/06459	OR	12/8	6.9	7.4	8.8	16.7	24.8	36.9	73.4	96.5	98.9	100.0	59

Table E-5

SUMMARY OF CENIZA-ARENA SIEVE ANALYSIS MEASUREMENTS
FOR TRAY SAMPLES FROM ALL STATIONS

Sample Number	Particle Diameter in Microns										d_{50} (microns)
	3	5	10	20	30	44	88	175	295	>295	
14001	0.30	0.47	1.2	13.4	35.0	32.5	54.3	91.7	99.6	100.0	80
14006	-	-	-	-	-	31.4	51.7	90.7	99.3	100.0	85
14011	0.45	0.77	1.9	15.8	28.5	37.8	61.5	96.8	99.95	100.0	69
14027	0.35	0.57	1.8	16.2	28.5	36.5	59.9	99.3	100.0	-	74
14028	0.50	0.77	2.1	16.5	28.4	36.5	58.3	99.2	100.0	-	75
14034	0.30	0.46	1.6	18.0	31.0	38.1	60.3	98.9	100.0	-	71
14044	0.34	0.44	1.1	11.6	21.6	28.6	48.0	85.0	98.95	100.0	92
14061	0.09	0.19	0.74	11.8	22.0	27.5	48.8	97.3	99.99	100.0	90
14078	0.30	0.46	1.3	16.5	30.0	38.2	59.5	92.8	99.9	100.0	70
14090	0.40	0.77	1.8	12.8	24.0	34.3	50.7	88.3	99.9	100.0	86
14105	1.0	1.5	4.6	15.4	24.4	34.5	51.0	84.2	99.6	100.0	85
14106	0.041	0.14	0.81	5.3	15.3	29.6	57.2	89.8	99.8	100.0	68
14107	0.17	0.23	1.6	16.0	30.0	40.7	70.4	98.6	99.99	100.0	59
14113	0.0	0.0	0.43	4.7	14.3	31.3	76.4	99.2	100.0	-	59
14118	0.64	1.0	2.2	9.2	16.2	23.8	38.7	94.8	100.0	-	107
14133	0.20	0.43	1.8	9.0	20.0	36.0	72.6	99.9	100.0	-	58
14138	0.60	0.89	2.2	10.0	20.0	37.5	79.4	99.97	99.99	100.0	56
14147	0.21	0.45	1.5	7.0	14.4	25.9	55.7	93.5	99.5	100.0	78
14166	0.55	0.90	2.3	8.8	17.0	29.2	60.5	95.9	99.6	100.0	71
14176	1.1	1.7	4.4	13.4	23.5	37.8	76.7	98.8	99.8	100.0	57
14193	0.15	0.32	1.2	9.0	19.3	32.8	56.8	91.5	98.6	100.0	73
14194	0.13	0.62	1.9	13.2	21.3	25.9	40.9	83.9	99.1	100.0	104
14209	-	-	-	-	-	6.3	14.0	34.0	72.5	100.0	225

Table 5-E (continued)

Sample Number	Particle Diameter in Microns										d_{50}
	3	5	10	20	30	44	88	175	295	>295	(microns)
14251	0.08	0.16	0.52	4.3	8.6	12.3	29.9	83.3	99.0	100.0	118
14263	0.22	0.32	0.62	5.9	13.4	22.7	51.9	90.7	99.4	100.0	85
14264	0.02	0.05	0.35	3.3	11.4	36.9	92.9	98.5	99.6	100.0	47
14265	0.72	1.1	3.2	11.0	21.4	38.4	92.4	98.5	99.5	100.0	52
14270	0.41	0.81	1.3	15.7	28.9	40.7	65.9	96.4	99.7	100.0	61
14290	0.22	0.32	1.5	15.2	30.0	43.8	76.4	99.9	100.0	-	54
14312	0.26	0.44	1.1	11.3	24.7	39.2	76.3	99.3	100.0	-	56
14324	0.52	0.77	1.6	14.3	28.4	42.4	74.3	99.5	100.0	-	56
14353	0.17	0.31	1.2	14.0	27.4	38.6	68.9	99.4	99.9	100.0	63
14354	0.56	0.74	2.1	15.4	26.3	33.8	54.3	92.1	99.8	100.0	80
14355	1.3	1.5	4.2	17.3	30.0	43.9	79.0	99.6	99.9	100.0	52
14356	0.15	0.51	1.8	6.6	15.0	36.3	84.3	98.3	99.1	100.0	52
14443	0.31	0.40	0.98	12.0	25.3	37.8	74.0	99.8	99.9	100.0	60
14468	1.8	2.4	6.2	16.7	29.5	53.6	95.1	99.3	99.7	100.0	42
14488	0.42	0.65	1.9	15.5	29.2	43.2	79.6	99.7	99.8	100.0	53
14495	0.84	1.1	2.7	16.6	29.2	41.4	76.2	99.5	99.8	100.0	56
14496	0.19	0.40	1.1	7.6	17.2	31.9	63.5	99.5	99.9	100.0	66
14523	0.80	1.4	3.6	9.6	13.3	23.0	71.0	99.8	99.9	100.0	69
14571	1.1	1.7	3.8	14.4	23.3	30.7	56.9	98.9	100.0	-	79
14572	-	-	-	-	-	27.2	61.4	95.2	99.9	100.0	73
14642	-	-	-	-	-	14.8	25.2	85.1	99.9	100.0	133
14645	0.19	0.42	2.5	10.6	18.8	28.2	63.0	97.6	99.7	100.0	72
14654	-	-	-	-	-	31.0	75.8	97.7	98.6	100.0	60
14655	0.16	0.43	1.6	4.8	9.3	16.4	51.0	97.2	99.9	100.0	87
14656	0.38	1.0	8.4	14.8	20.5	27.5	46.9	78.9	99.4	100.0	96
14657	0.11	0.16	0.75	8.7	18.6	29.1	61.8	97.9	99.7	100.0	74

Table E-5 (continued)

Sample Number	Particle Diameter in Microns)										d_{50} (microns)
	3	5	10	20	30	44	88	175	295	>295	
14708	0.43	0.70	1.7	6.4	13.5	27.0	77.9	99.8	99.9	100.0	63
14722	0.15	0.27	1.2	5.4	12.3	26.5	80.1	99.9	100.0	-	62
14728	0.18	0.35	1.2	4.7	10.7	23.4	76.3	99.5	99.9	100.0	65
14751	0.65	1.2	3.4	11.7	20.0	29.6	46.2	83.7	100.0	-	100
14767	-	-	-	-	-	2.5	33.6	96.4	99.3	100.0	103
14796	0.53	0.77	1.6	7.8	13.8	19.6	47.5	98.5	100.0	-	91
14797	5.6	7.6	17.4	44.4	60.0	72.1	90.8	99.4	99.8	100.0	23
06001	0.65	0.84	1.8	11.2	20.8	30.7	57.4	93.3	99.1	100.0	76
06002	0.38	0.49	1.4	14.3	28.0	40.0	69.3	98.9	100.0	-	61
06004	0.37	0.42	1.2	14.0	27.2	37.3	61.8	98.0	100.0	-	70
06023	0.38	0.54	1.3	14.0	25.2	32.4	52.1	90.3	99.6	100.0	83
06024	0.09	0.22	1.0	13.0	23.8	30.8	50.3	90.1	99.8	100.0	88
06044	0.02	0.06	0.60	4.9	13.5	30.0	62.4	93.2	98.6	100.0	63
06056	0.25	0.45	1.5	7.1	14.2	23.7	50.7	89.5	97.7	100.0	87
06079	0.86	1.3	3.3	14.3	24.2	34.0	62.0	95.7	99.1	100.0	70
06088	1.1	1.6	4.6	12.6	20.8	31.8	57.6	93.1	98.2	100.0	73
06089	0.13	0.28	1.0	4.7	10.0	18.1	42.5	84.1	96.3	100.0	100
06090	0.06	0.12	0.61	6.2	16.3	31.3	61.4	93.8	99.1	100.0	67
06091	0.17	0.28	0.95	9.4	18.7	27.6	53.5	94.3	99.5	100.0	83
06135	0.22	0.34	1.6	17.4	34.0	48.5	80.7	99.7	100.0	-	46
06163	-	-	-	-	-	34.0	57.5	88.9	98.6	100.0	74
06183	0.24	0.46	1.4	7.2	14.4	23.8	52.2	88.4	97.7	100.0	84
06192	-	-	-	-	-	41.9	68.6	97.6	100.0	-	59
06193	0.32	0.52	1.5	13.8	26.0	34.9	59.1	93.3	98.8	100.0	75
06228	0.40	0.73	1.6	9.7	19.8	32.2	70.6	99.8	100.0	-	66
06239	0.48	0.73	1.5	15.0	29.1	40.6	69.5	99.7	99.95	100.0	61

Table E-5 (continued)

Sample Number	Particle Diameter in Microns										d_{50}
	3	5	10	20	30	44	88	175	295	>295	(microns)
06260	0.30	0.38	1.3	8.4	17.8	30.1	59.3	88.5	98.5	100.0	73
06280	0.52	0.62	1.7	16.5	31.4	43.7	71.2	98.1	99.5	100.0	55
06281	0.55	0.66	1.6	9.0	22.8	46.0	88.3	99.5	99.7	100.0	46
06282	1.5	2.0	4.9	15.8	29.2	49.6	88.1	99.1	99.5	100.0	45
06295	-	-	-	-	-	56.0	89.4	98.4	99.7	100.0	40
06313	0.51	0.68	1.7	14.0	27.8	42.5	73.6	97.2	99.6	100.0	54
06317	0.45	0.83	2.1	14.6	28.8	43.8	74.5	97.5	99.9	100.0	52
06318	0.53	0.66	1.9	10.2	22.0	39.8	78.5	98.9	99.9	100.0	53
06354	-	-	-	-	-	34.1	64.0	96.1	99.8	100.0	68
06355	0.38	0.66	2.0	8.5	18.0	32.9	78.7	99.8	100.0	-	60
06398	1.0	1.7	3.9	11.3	20.8	36.6	82.3	99.7	99.9	100.0	55
06409	0.55	0.92	2.6	9.4	18.5	33.3	74.96	99.7	99.9	100.0	61
06437	0.65	0.98	2.3	6.7	13.2	27.3	84.9	99.9	99.97	100.0	59
06472	0.63	0.96	1.9	5.2	9.8	21.4	74.7	99.6	99.9	100.0	66
06473	0.62	0.70	1.6	5.6	11.8	25.8	62.0	95.2	99.9	100.0	63
06474	0.27	0.34	0.99	5.5	11.6	20.7	60.1	98.2	99.98	100.0	78
06504	0.44	0.71	1.7	4.9	9.3	16.4	51.8	98.1	99.8	100.0	86
06519	0.75	1.1	2.0	9.6	17.7	26.5	56.9	98.1	99.9	100.0	80
06522	0.38	0.68	1.9	6.4	12.6	23.8	68.7	99.8	100.0	-	71
06573	0.03	0.23	1.1	3.1	8.2	22.1	76.4	99.7	99.9	100.0	64
06637	0.26	0.45	1.2	6.6	15.3	30.3	77.4	99.9	100.0	-	61
06652	-	-	-	-	-	19.2	37.9	75.7	99.2	100.0	85
06654	1.1	1.3	1.7	7.5	16.7	34.0	77.6	97.4	99.9	100.0	57
13502	1.6	1.9	4.9	14.2	25.3	43.3	86.0	99.7	100.0	-	50
13503	1.2	1.5	3.4	8.2	13.8	24.6	69.6	99.7	100.0	-	70
13509	2.5	2.9	4.1	9.0	14.4	22.4	50.5	93.8	99.7	100.0	87

Table E-5 (concluded)

Sample Number	Particle Diameter in Microns										d_{50}
	3	5	10	20	30	44	88	175	295	>295	(microns)
13510	0.04	0.05	2.4	9.6	19.3	35.2	75.6	98.4	99.7	100.0	59
15050	0.47	0.76	2.0	7.1	13.2	25.4	71.4	99.7	100.0	-	68
15051	0.80	1.1	3.0	9.5	16.2	24.5	60.9	99.3	99.8	100.0	76
15067	-	-	-	-	-	30.0	69.4	99.1	99.9	100.0	67
16017	1.1	1.4	2.1	8.8	18.7	36.4	82.0	99.0	99.9	100.0	43
16028	2.1	2.2	2.5	7.5	13.4	26.4	74.6	99.4	99.9	100.0	64
16052	-	-	-	-	-	48.3	86.1	99.9	100.0	-	46

Figure E-1

ACCUMULATED CENIZA-ARENA WEIGHT DISTRIBUTIONS
FOR SAMPLE SET NO. 26, PLOT NO. 1

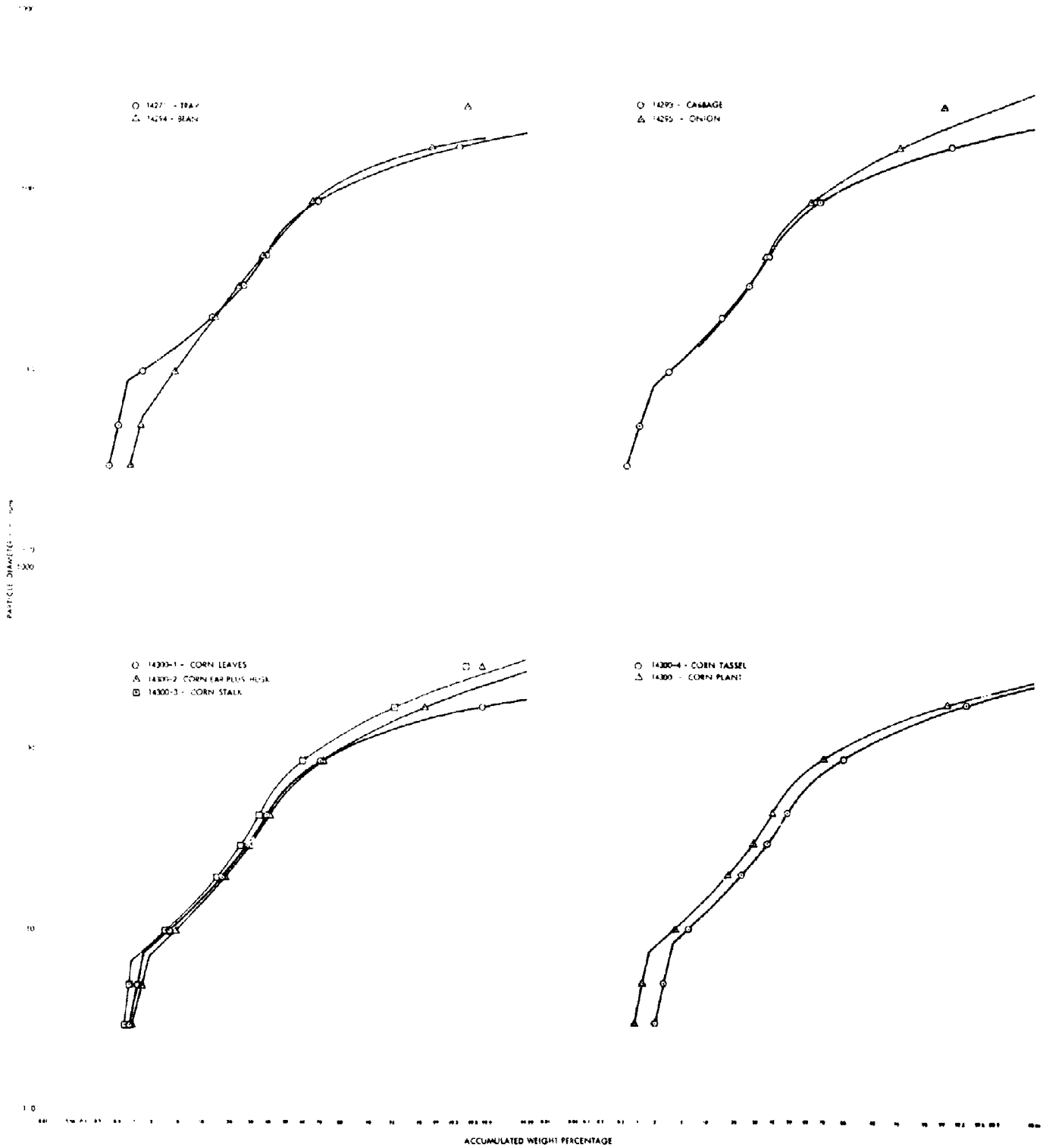
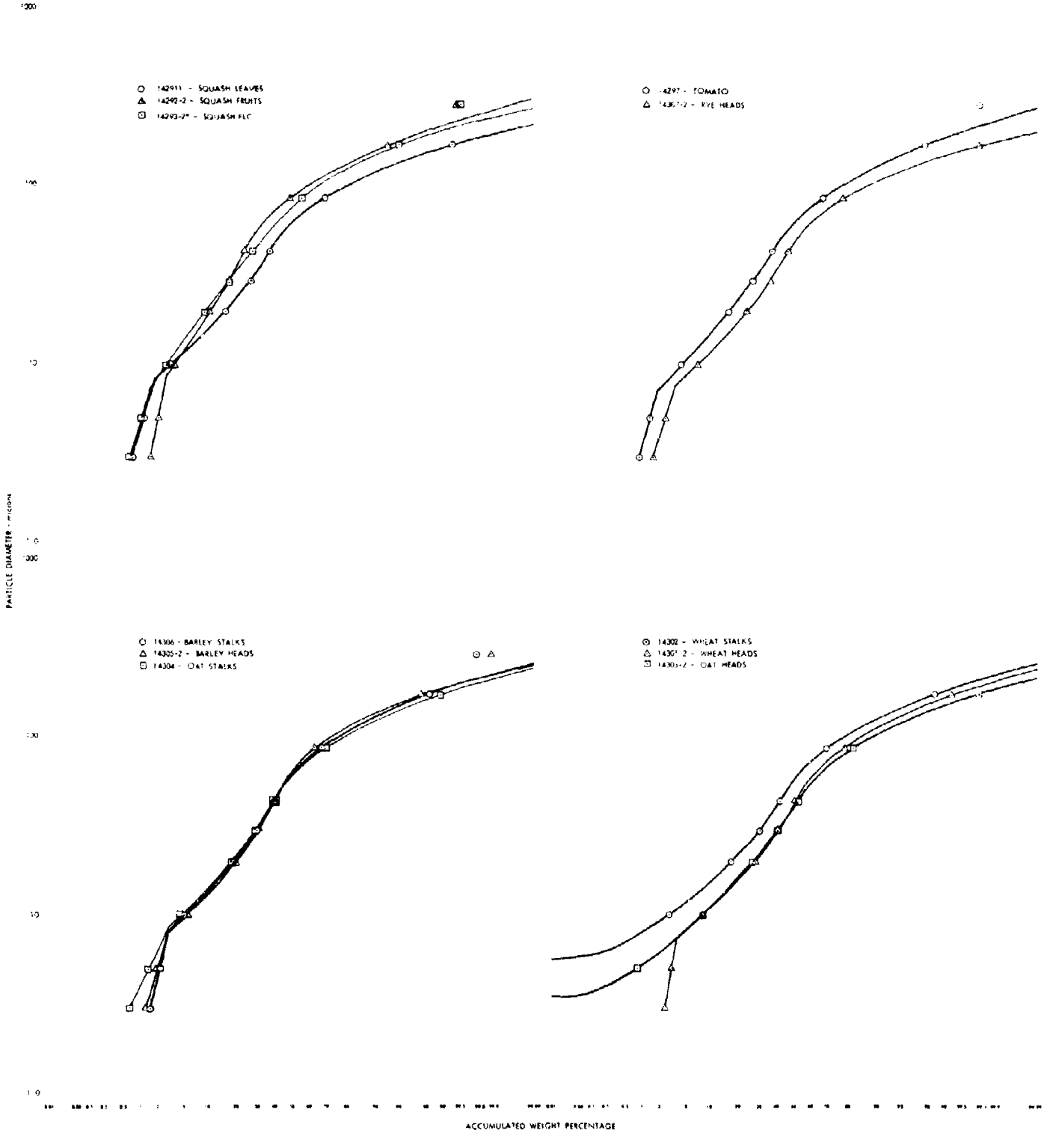


Figure E-2

ACCUMULATED CENIZA-ARENA WEIGHT DISTRIBUTIONS
FOR SAMPLE SET NO. 26, PLOT NO. 1 (concluded)



Appendix F

FOLIAR SPECIFIC AREAS AND PLANT GEOMETRY

Appendix F

FOLIAR SPECIFIC AREAS AND PLANT GEOMETRY

The maximum projected areas of plant parts were determined mainly from prints of the plant parts or sections that were photographed with the parts or sections placed on grid paper. In addition, some area measurements were made from direct measurements of the plant part, from outline drawings, and from verifax prints of fresh flat specimens mounted on cardboard. For some specimens, the measurements had to be made without delay after sampling to avoid wilting and shrinkage of plant parts before measurement. Examples of the types of photographs that were used in the area measurements are given in Figures F-1, F-2, F-3, and F-4 for beans, peas, barley, and grapefruit leaves, respectively. The areas were determined with a planimeter; in a few cases, a weighing method was used on cut-out parts. Initially, photographs were taken of both sides of each leaf (they were numbered with a ball-point pen for identification); however, this was discontinued when it was found that about the same areas were obtained from both photographs.

The area measurements are summarized in Tables F-1, F-2, and F-3 for vegetables, cereal grains, and trees, respectively. Because of the generally tight sampling schedule, it was not always possible to make individual weighings of each leaf or plant part in a sample; in such cases, the combined sample was weighed and the areas of all the individual parts were summed for calculation of an average foliar specific area for the sample. For the samples where each leaf was weighed, the foliar specific area for each could be calculated; the values obtained by this method are given in Table F-4.

For some plants, such as the pea and potato, the maximum projected area may be somewhat less than the total area of one side of the leaf because some of the leaf sections overlap and are maintained rather rigidly in the overlapped position. The projected area of stems and tubular foliage such as that of the onion, is considerably less than the total area. (However, for the case of a fallout shower that arrives from one direction, the projected area is the important parameter for

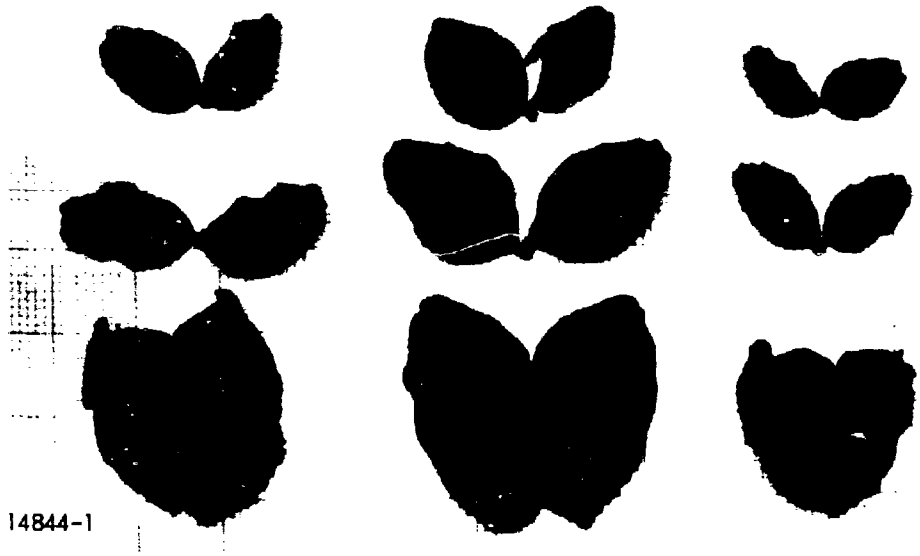
particle interception.) A few area measurements were made on the foliage of these types of plants to determine the ratio between the maximum projected area and the total area of the leaves and stems. The results are given in Table F-5. The value of the ratio for the stems is almost exactly the value calculated for a cylindrical tube. In the pea stem leaves, potato leaflets, and radish leaves, the projected areas are within approximately 5 to 10 percent of the total area of one side of the whole leaf.

The area measurements of lacy leaves, such as those of the carrot, included the whole area of the major segments of a flattened branch or frond.

The foliar specific areas from the measurements of the maximum projected areas provide only initial information for a detailed analysis of the foliar contamination process. The plant geometry, including the spatial density of the leaves and the angular display of the leaves, is one of the major factors in determining the amount of particles that impact and are retained by the plant as a whole. To obtain data on these geometric factors, photographic data were taken of the field grown plants. A minimum of two views (at 90-degree angles from each other) of each specimen or group of specimens was photographed. Example sets of such photographs of beets, carrots, cabbage, corn, lettuce, onion, and squash are shown in Figures F-5 through F-10. One of four photographs for evaluating the volume density of the leaves of the laurel tree is shown in Figure F-11. Data obtained from these photographs are summarized in Part Three of this report.

Figure F-1
AREA PHOTOGRAPH: BEAN LEAVES AND PODS (MAX)

Figure F-2
AREA PHOTOGRAPH: PEA LEAVES AND PODS (MIN)



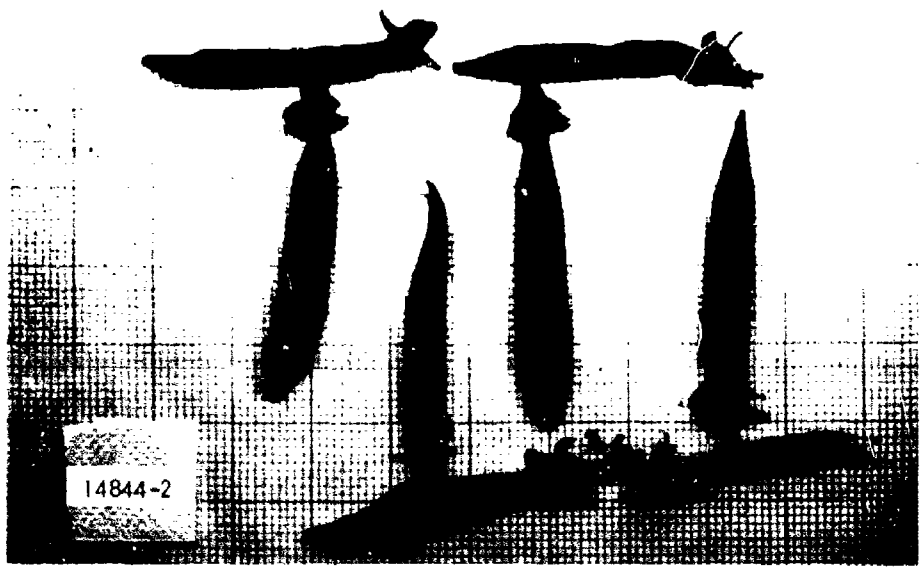


Figure F-3
AREA PHOTOGRAPH: BARLEY LEAVES AND STEMS

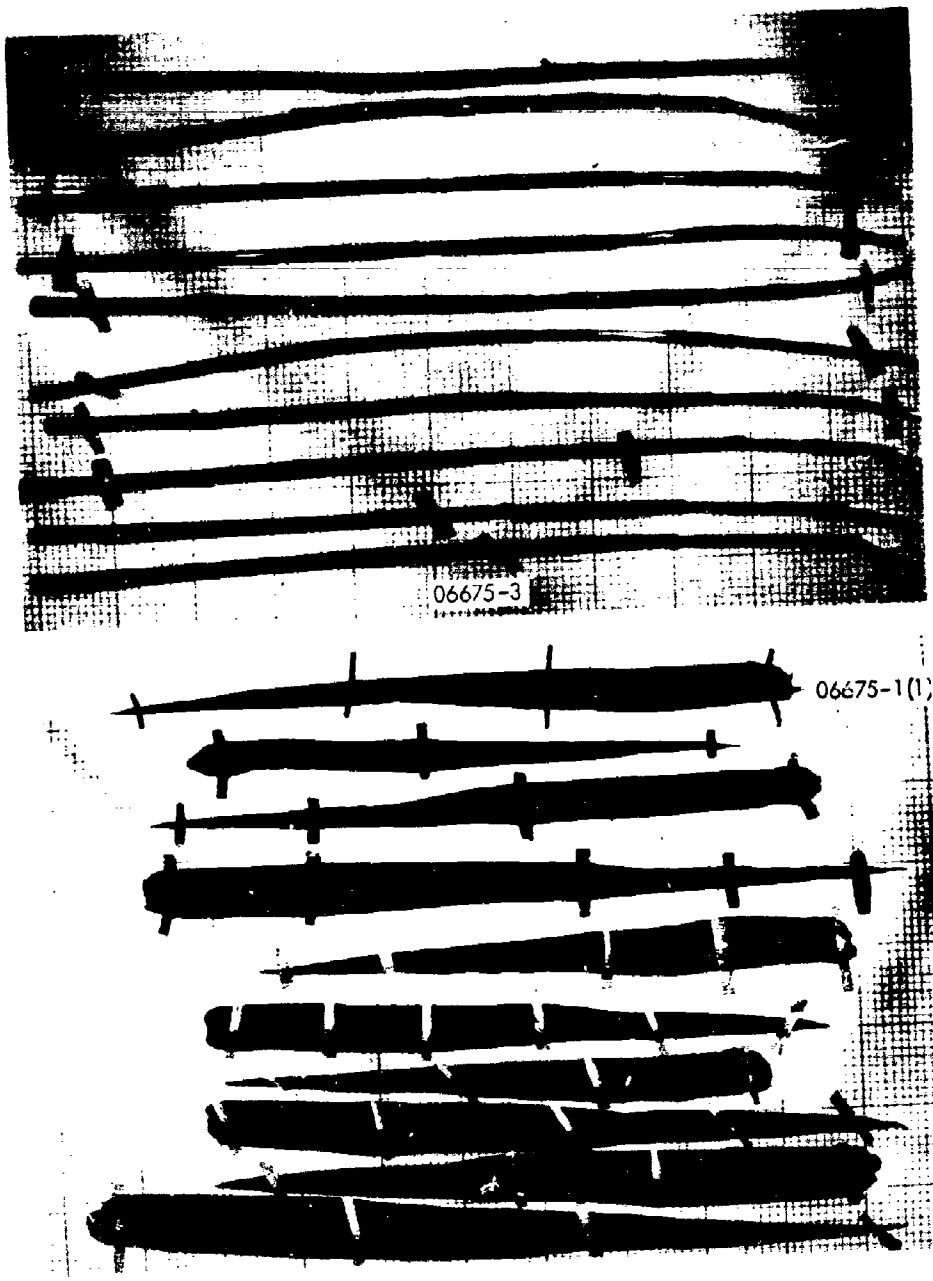
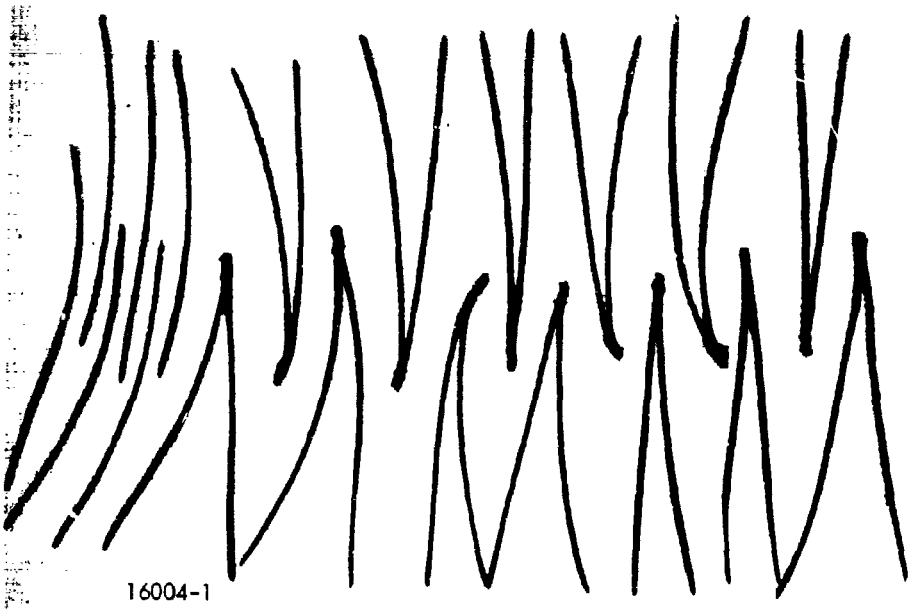


Figure F-4

AREA PHOTOGRAPH: GRAPEFRUIT LEAVES AND PINE NEEDLES



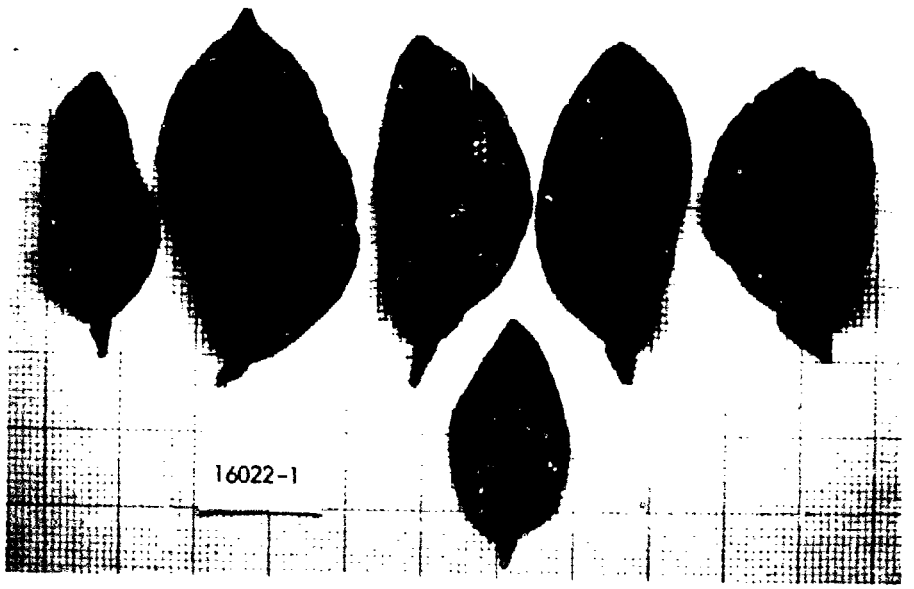


Table F-1

AREA MEASUREMENTS OF PLANT PARTS: VEGETABLES

Area in Square Feet

BEAN	14659-1	0.0081	14837-1	14837-3
		0.0665		
14658-1	0.0382	0.0365	0.0397	0.0463
	0.0244	0.0565	0.0421	
0.0270	0.0208	0.0809	0.0625	
0.0317	0.0181	0.0802	0.0569	14839-1
0.0266	0.0185	0.0456	0.0245	
0.0223	0.0221	0.0401	0.0087	0.0540
0.0255	0.0255	0.0317	0.0206	0.0355
0.00493	0.0201		0.0475	0.0635
0.00528	0.0278		0.0147	0.0478
0.00549	0.0191	14833-2		0.0323
0.0518	0.0207			0.0331
0.0457	0.0187	0.00749	14837-2[a]	0.0069
0.0324	0.0176	0.0122		0.0371
0.0274	0.00236	0.00895	0.0193	0.0427
0.0278	0.00278	0.0223	0.0143	0.0748
0.0335	0.00215	0.00365	0.0023	0.0186
0.0361	0.00139	0.00713	0.0120	0.0173
0.0293	0.00083	0.0128	0.0282	0.0502
0.00812	0.00097	0.0133	0.0131	0.0369
0.0112	0.00104	0.00603	0.0156	0.0334
0.00632	0.00056	0.00749	0.0208	0.0374
0.00743	0.00062	0.00859		0.0370
0.00847		0.0170		0.0091
0.00569		0.0111	14837-2[b]	0.0100
0.0122	14833-1	0.00329		0.0116
0.00257		0.0153	0.0010	0.0129
0.00333	0.0862	0.0132	0.0145	0.0251
0.00222	0.0915	0.0197	0.0015	0.0189
0.00174	0.0525		0.0075	
0.00153	0.0282		0.0214	
0.00153	0.0181	14833-3	0.0088	
0.00076	0.0104		0.0154	
0.00042	0.0530	0.3625	0.0145	
0.00042	0.1030			
	0.0911			
	0.0288			

Table F-1 (continued)

Area in Square Feet

11839-2[a]	0.0249	11848-1	0.0506	0.00167
	0.0390		0.0749	0.000556
0.0222		0.0665	0.0750	0.000556
0.0135		0.0362	0.0869	0.000833
0.0129	BEET	0.0407	0.0414	
0.0042		0.0724	0.00583	
0.0036	14669-1	0.0585	0.00333	11834-3
0.0010		0.0650		
0.0022	0.0569	0.0625		0.0242
0.0200	0.0485	0.0635	11834-1	
0.0171	0.0623	0.0759		
0.0131	0.0553	0.0734	0.210	06565-1
0.0204	0.0337	0.0263	0.200	
	0.0310	0.0154	0.313	0.0197
11839-2[b]	0.0398	0.0580	0.266	0.0112
	0.0315	0.0084	0.360	0.0153
0.0208	0.0197	0.0124	0.384	0.0287
0.0127	0.0109	0.0377	0.398	0.0130
0.0110	0.00354	0.0233	0.394	0.0122
0.0024			0.363	0.0114
0.0043	11805-1	CABBAGE	0.325	0.0120
0.0012			0.293	0.0201
0.0022	0.0187	14662-1	0.271	0.00653
0.0186	0.0233		0.136	0.00951
0.0139	0.0249	0.0253	0.086	0.00271
0.0098	0.0247	0.0344	0.055	0.00194
0.0200	0.0249	0.0656	0.0408	0.00174
	0.0064	0.0807	0.0294	
	0.0123	0.0569	0.0256	
11839-3	0.0014	0.1067	0.0194	CARROT
	0.0040	0.0685	0.0178	
0.0787	0.0087	0.0264	0.0119	11841-1
	0.0133	0.00535	0.0100	
	0.0253		0.00722	0.168
06567-1	0.0176		0.00639	0.023
	0.0312	14663-1	0.00444	0.038
0.0272	0.0235		0.00333	0.035
0.0351		0.0288	0.00250	0.144
0.0423		0.0893	0.00194	0.125
			0.00139	0.181

Table F-1 (continued)

Area in Square Feet

CARROT

14841-1 (cont'd.)

0.172
0.145
0.175
0.136
0.069
0.039

06632-1

0.0137
0.0528
0.00826
0.0271
0.0460
0.0149
0.0206
0.0215
0.0190
0.0444
0.0402
0.0514
0.0497
0.0810
0.0619
0.0294
0.0664
0.0276
0.0187

CORN

14845-1

0.0625
0.120
0.205
0.299
0.384
0.427
0.421
0.382
0.341
0.235
0.0868

14845-3[a]

0.154

14845-3[b]

0.103

14845-4

0.0468

06559-1

0.397
0.527
0.646
0.824
0.717
0.702
0.585
0.456
0.327
0.225
0.136
0.0557

06559-3[a]

0.187

06559-3[b]

0.146

06694-1

0.285
0.447
0.456
0.487
0.553
0.558
0.538
0.506
0.348
0.279
0.158
0.0679

06694-2[a]

0.1870

06694-2[b]

0.1320

06694-3[a]

0.3870

06694-3[b]

0.3397

06694-4

0.2043

ONION

14667-1

0.0159
0.0152
0.0154
0.0169
0.0193
0.0181
0.0149
0.00815
0.00220

14836-1[a]

0.0581
0.0604
0.0761
0.0625
0.0622
0.0694
0.0702
0.0751
0.0246
0.0575

14836-1[b]

0.0549
0.0593
0.0741
0.0618
0.0618
0.0689
0.0637
0.0681
0.0243
0.0505

14836-3

0.0242

14836

0.697

14850-1

0.0663

Table F-1 (continued)

Area in Square Feet

ONION (cont'd.)

14850-2*

0.0158

PEA

14844-1[c]

0.0502
0.0486
0.0458
0.0284
0.0490
0.0406
0.0243
0.0374
0.0160
0.0445

14844-1[d]

0.0482
0.0466
0.0466
0.0351
0.0471
0.0387
0.0312
0.0457
0.0210
0.0515

14844-2[a]

0.0151
0.0185
0.0169
0.0147
0.0111
0.0167
0.0206
0.0179

14844-2[b]

0.00913
0.00952
0.0133
0.0133
0.0145
0.0123
0.00833
0.00417

14844-3

0.1025

06569-2[a]

0.0118
0.00792
0.00924
0.00569
0.00729
0.00847
0.00549
0.00410
0.00465
0.00403

06569-2[b]

0.00528
0.00306
0.00437
0.00333
0.00181
0.00243
0.00278
0.00251
0.00319
0.00278
0.00251
0.00319
0.00278

06634-1[c]

0.0106
0.0185
0.0227
0.0264
0.0303
0.0238
0.0339
0.0392

06634-1[d]

0.0202
0.0130
0.0162
0.0190
0.0222
0.0286
0.0304
0.0274

06634-3

0.0454

06635-1[c]

0.0595
0.0584
0.0624
0.0394
0.0170
0.0278
0.0244
0.0212
0.0144
0.0269
0.0124
0.0103

06635-1[d]

0.0266
0.1068
0.0735
0.0725
0.0626
0.0474
0.0367
0.0293
0.0236
0.0189
0.0160

06635-3

0.0910

PEPPER

14665-1

0.00514
0.0115
0.0121
0.00951
0.0136
0.0112
0.00993
0.0131
0.00993
0.0126
0.00493
0.00479
0.0044
0.00319
0.00514
0.00278
0.00243
0.00174
0.00083

14666-1

0.00812
0.00792
0.00757
0.00674
0.00812
0.00660
0.00299
0.00229
0.00444
0.00243
0.00146
0.00139
0.00104
0.00049
0.00021

Table F-1 (continued)

Area in Square Feet

PEPPER (cont'd.)

14847-1

0.0407
0.0188
0.0104
0.0005
0.0060
0.0010
0.0015
0.0099
0.0030
0.0060
0.0169
0.0193
0.0094
0.0184
0.0025
0.0060
0.0094
0.0060
0.0050
0.0084
0.0064
0.0060
0.0069
0.0045
0.0060
0.0025
0.0124
0.0119
0.0149

14847-2

0.0426

14847-3

0.00893

POTATO

14843-1

0.0643
0.0248
0.0458
0.0772
0.0671
0.0863
0.0511
0.0558
0.0267
0.0743
0.0109

14843-3

0.0067

C6521-1

0.0431
0.0341
0.0262
0.0256
0.0294
0.0301
0.0149
0.0136
0.0387
0.0206
0.0215
0.0154
0.0144
0.0514
0.0579
0.0460
0.0429
0.0345
0.0581
0.0481
0.0463
0.0410
0.0203
0.0272
0.0151
0.00792
0.0177
0.0146
0.00528
0.0465
0.0440
0.0272
0.0244
0.0431
0.0583
0.0381
0.0366
0.0340
0.0179
0.0302
0.0481
0.0417
0.0419
0.0381
0.0428
0.0218
0.0246
0.0228
0.0793
0.0486
0.0419
0.0401
0.0350
0.0318
0.0688
0.0864
0.0551
0.0408
0.0303
0.0298
0.0243
0.0219
0.0212
0.0142
0.0149
0.0280
0.0211
0.00569

06563-1

0.0668
0.0550
0.1277
0.1642
0.1151
0.1151
0.1326
0.1114
0.0563
0.0477

RADISH

14660-1

0.0836
0.0532
0.0566
0.0436
0.0112
0.00729
0.00910
0.00479
0.00160
0.00104
0.00507
0.00410
0.00097
0.00132
0.00083
0.00181
0.00437
0.00354
0.00375
0.00590

14661-1

0.0577
0.0349
0.0722
0.0108
0.00708
0.00660
0.00278
0.0497
0.0115
0.00993
0.00660
0.00479
0.00458
0.00458
0.00299
0.00181
0.00194
0.00104
0.00285
0.00104

Table F-1 (continued)

Area in Square Feet

RADISH (cont'd.)		0.142
		0.042
		0.148
06566-1		
0.0428	14846-2	
0.0329		
0.0293	0.0147	
0.0267	0.0139	
0.0335	0.0078	
0.0228	0.0106	
0.0119	0.0135	
0.00278	0.0098	
0.0399		
0.0250		
0.0228	14846-2*	
0.0319		
0.0121	0.0151	
0.00618	0.0180	
0.0228	0.0053	
0.0221		
0.0230		
0.019[illegible]	14846-3	
0.00764		
0.0272	0.0282	
SQUASH		
14846-1		
0.104		
0.104		
0.059		
0.113		
0.097		
0.135		
0.122		
0.142		
0.113		

Footnote to Table F-1

Description of Area Measurement Samples

BEAN

14658-1	1 plant; 32 leaflets; bottom to top
14659-1	1 plant; 22 leaflets; bottom to top
14833-1	2 plants; 57 leaflets
14833-2	2 plants, 17 pods; max. area
14833-3	2 plants, stems
14837-1	1 plant; 27 leaflets
14837-2[a]	1 plant; 8 pods; max. area
14837-2[b]	1 plant; 8 pods; min. area
14837-3	1 plant; stems
14839-1	3 plants; 67 leaflets
14839-2[a]	3 plants; 11 pods; max. area
14839-2[b]	3 plants; 11 pods; min. area
14839-3	3 plants; stems
06567-1	5 plants; 2 leaves per plant

BEET

14669-1	1 plant: 11 leaves
14805-1	1 plant; 15 leaves
14848-1	1 plant; 17 leaves

CABBAGE

14662-1	1 plant; 9 leaves
14663-1	1 plant; 9 leaves
14834-1	1 plant; 33 leaves (including forming head)
14834-3	stem
06565-1	10 plants; 14 leaves (1st and 2nd leaves)

CARROT

14841-1	1 plant; 13 leaves
06632-1	3 plants; 19 leaves

CORN

14845-1	1 plant; 11 leaves; bottom to top
14845-3[a]	1 plant; stalk; max. area
14845-3[b]	1 plant; stalk; min. area
14845-4	1 plant; tassel
06559-1	1 plant; 12 leaves; bottom to top
06559-3[a]	1 plant; stalk; max. area
06559-3[b]	1 plant; stalk; min. area
06694-1	1 plant; 12 leaves; bottom to top
06694-2[a]	1 plant; ear plus husk; max. area
06694-2[b]	1 plant; ear plus husk; min. area
06694-3[a]	1 plant; stalk; max. area
06694-3[b]	1 plant; stalk; min. area
06694-4	1 plant; tassel

ONION

14667-1	1 plant; 9 stems
14836-1[a]	10 stems; max. area
14836-1[b]	10 stems; min. area
14836-3	base stem
14836	1 plant; 13 stems plus base stem; side view or max. area
14850-1	1 enlarged stem
14850-2*	1 flower or seed head

PEA

14844-1[c]	1 plant; 40 regular leaves
14844-1[d]	1 plant; 10 stem leaves
14844-2[a]	8 pods; max. area
14844-2[b]	8 pods; min. area
11814-3	1 plant; stems and tendrils
06569-2[a]	10 pods; max. area
06569-2[b]	10 pods; min. area
06634-1[c]	1 plant; 50 regular leaves
06634-1[d]	1 plant; 9 stem leaves
06634-3	1 plant; stems and tendrils

Footnote to Table F-1 (concluded)

PEA (cont'd.)

06635-1[c]	1 plant; 33 regular leaves
06635-1[d]	1 plant; 13 stem leaves
06635-3	1 plant; stems and tendrils

PEPPER

14665-1	1 plant; 19 leaves
14666-1	1 plant; 15 leaves
14847-1	1 plant; 29 leaves
14847-2	fruit
14847-3	1 plant; stem

POTATO

14843-1	1 plant; 11 sets of leaflets
14843-3	1 plant; stems
06521-1	1 plant; 56 single leaves
06563-1	1 plant; leaves and stem leaflet sections by branch; 10 branches

RADISH

14660-1	1 plant; 20 leaves
14661-1	1 plant; 20 leaves
06566-1	1 plant; 20 leaves

SQUASH

14846-1	1 plant; 12 leaves
14846-2	1 plant; 6 fruit
14846-2*	1 plant; 3 flowers
14846-3	1 plant; stems

Table F-2

AREA MEASUREMENTS OF PLANT PARTS: CEREAL GRAINS

Area in Square Feet

BARLEY

06631-1(1)

0.0279
0.0394
0.0469
0.0448
0.0446
0.0475
0.0490
0.0507
0.0424
0.0385

06631-1(2)

0.0357
0.0306
0.0412
0.0419
0.0392
0.0479
0.0366
0.0398
0.0270
0.0229

06631-1(3)

0.0258
0.0301
0.0341
0.0316
0.0357
0.0327
0.0278
0.0286
0.0227
0.0181

06631-1(4)

0.0240
0.0308
0.0217
0.0250
0.0206
0.0217
0.0164
0.0225
0.0255

06631-1(5)

0.0128
0.0131
0.0136
0.0162
0.0185
0.0202
0.00986
0.0136
0.0131

06631-3

0.0194
0.0153
0.0152
0.0147
0.0137
0.0181
0.0159
0.0212
0.0119
0.0155

06675-1(1)

0.0192
0.0132
0.0196
0.0264
0.0208
0.0228
0.0171
0.0271
0.0267
0.0349

06675-1(2)

0.0379
0.0345
0.0347
0.0214
0.0311
0.0256
0.0313
0.0266
0.0208
0.0258

06675-1(3)

0.0238
0.0270
0.0255
0.0171
0.0231
0.0252
0.0253
0.0208
0.0203
0.0246

06675-1(4)

0.0226
0.0218
0.0216
0.0189
0.0193
0.0210
0.0235
0.0166
0.0172
0.0193

06675-1(5)

0.0182
0.0188
0.0178
0.0151
0.0149
0.0176
0.0172
0.0139

Table F-2 (continued)

Area in Square Feet

BARLEY	OAT	06630-1(4)	14782-1(2)
06675-1(5)	06630-1(1)	0.0104	0.0178
(cont'd.)		0.0120	0.0149
	0.0233	0.0138	0.0168
0.0155	0.0335	0.0104	0.0142
0.0145	0.0248	0.0119	0.0166
	0.0375	0.0133	0.0154
	0.0315	0.0103	0.0167
06675-1(6)	0.0331	0.0100	0.0111
	0.0174	0.00944	0.0124
0.0178	0.0250	0.0106	0.0113
0.0139	0.0201		
0.0139	0.0265	06630-3	
0.0114			14782-1(3)
0.0133		0.00312	
0.0139	06630-1(2)	0.00347	0.0140
0.0065		0.00472	0.0126
0.0137	0.0262	0.00299	0.0128
0.0114	0.0251	0.00451	0.0152
	0.0295	0.00340	0.00993
	0.0238	0.00340	0.0105
06675-1(7)	0.0238	0.00292	0.0128
	0.0266	0.00340	0.0117
0.0115	0.0268	0.00215	0.0101
0.0107	0.0258		0.0112
0.0081	0.0288		
	0.0258	WHEAT	
			14782-1(4)
06675-3	06630-1(3)	14782-1(1)	
			0.0124
0.0225	0.0217	0.00868	0.00993
0.0218	0.0258	0.0173	0.00778
0.0231	0.0199	0.0124	0.00937
0.0235	0.0202	0.0136	0.0119
0.0255	0.0163	0.0147	0.00708
0.0257	0.0131	0.0115	0.00833
0.0282	0.0187	0.0133	0.00778
0.0286	0.0222	0.0108	0.00708
0.0291	0.0181	0.00743	0.00632
0.0290	0.0177	0.00708	

Table F-2 (continued)

Area in Square Feet

WHEAT (cont'd.)

14782-2[a]

0.0125
0.0133
0.0126
0.0137
0.0103
0.0110
0.0101
0.0135
0.0112
0.0104

14782-2[b]

0.00972
0.00882
0.00979
0.0106
0.00771
0.00826
0.00882
0.00896
0.0112
0.00785

14782-3

0.0176
0.0165
0.0181
0.0208
0.0190
0.0201
0.0219
0.0210
0.0194
0.0192

14835-1(1)

0.0083
0.0108
0.0037
0.0077
0.0120
0.0071
0.0091
0.0141
0.0098
0.0091

14835-1(2)

0.0081
0.0117
0.0054
0.0083
0.0123
0.0115
0.0105
0.0161
0.0099
0.0131

14835-1(3)

0.0057
0.0088
0.0055
0.0067
0.0102
0.0116
0.0080
0.0116
0.0088
0.0110

14835-1(4)

0.0050
0.0105
0.0067
0.0126

14835-2[a]

0.0044
0.0062
0.0046
0.0054
0.0068
0.0058
0.0068
0.0073
0.0068
0.0066

14835-2[b]

0.0044
0.0062
0.0040
0.0050
0.0065
0.0058
0.0069
0.0071
0.0062
0.0058

14835-3

0.0233
0.0226
0.0202
0.0210
0.0208
0.0204
0.0225
0.0200
0.0249
0.0229

06629-1(1)

0.0190
0.0182
0.0108
0.015[illegible]
0.019[illegible]
0.0152
0.0119
0.0178
0.0110
0.0114

06629-1(2)

0.0142
0.0140
0.0147
0.0151
0.0183
0.0119
0.0175
0.0116
0.0156
0.00764

Table F-2 (continued)

Area in Square Feet

WHEAT (cont'd.)

06629-1(3)

0.0112
0.00951
0.0110
0.00833
0.00597
0.00812
0.0111
0.00854
0.00660
0.00604

06629-1(4)

0.00972
0.00708
0.00708
0.00340
0.00528
0.00458
0.00514
0.00500
0.00618
0.00639

06629-3

0.00590
0.00722
0.00660
0.00542
0.00653
0.00778
0.00660
0.00486
0.00479
0.00389

06674-2

0.0089
0.0071
0.0060
0.0081
0.0081
0.0058
0.0079
0.0079

Footnote to Table F-2

Description of Area Measurement Samples

BARLEY

06631-1(1)	top leaf; 10 stalks
06631-1(2)	second leaf; 10 stalks
06631-1(3)	third leaf; 10 stalks
06631-1(4)	fourth leaf; 9 stalks
06631-1(5)	fifth leaf; 9 stalks
06631-3	stems; 10 stalks
06675-1(1)	top leaf; 10 stalks
06675-1(2)	second leaf; 10 stalks
06675-1(3)	third leaf; 10 stalks
06675-1(4)	fourth leaf; 10 stalks
06675-1(5)	fifth leaf; 10 stalks
06675-1(6)	sixth leaf; 9 stalks
06675-1(7)	seventh leaf; 3 stalks
06675-3	stems and forming top leaflets; 10 stalks

OAT

06630-1(1)	top leaf; 10 stalks
06630-1(2)	second leaf; 10 stalks
06630-1(3)	third leaf; 10 stalks
06630-1(4)	fourth leaf; 10 stalks
06630-3	stems; 10 stalks

WHEAT

14782-1(1)	top leaf; 10 stalks
14782-1(2)	second leaf; 10 stalks
14782-1(3)	third leaf; 10 stalks
14782-1(4)	fourth leaf; 10 stalks
14782-2[a]	stalk; max. area; 10 stalks
14782-2[b]	stalk; min. area; 10 stalks
14782-3	stems; 10 stalks

Footnote to Table F-2 (concluded)

WHEAT
(cont'd.)

14835-1(1)	top leaf; 10 stalks
14835-1(2)	second leaf; 10 stalks
14835-1(3)	third leaf; 10 stalks
14835-1(4)	fourth leaf; 4 stalks
14835-2[a]	heads; max. area; 10 stalks
14835-2[b]	heads; min. area; 10 stalks
14835-3	stems; 10 stalks
06629-1(1)	top leaf; 10 stalks
06629-1(1)	second leaf; 10 stalks
06629-1(3)	third leaf; 10 stalks
06629-1(4)	fourth leaf; 10 stalks
06629-3	stems; 10 stalks
06674-2	8 heads

Table F-3

AREA MEASUREMENTS OF PLANT PARTS: TREES

Area in Square Feet

AVOCADO	0.0267	0.0335	0.0341
	0.0267	0.0333	0.0454
14641-1	0.0172	0.0201	0.0505
		0.0192	0.0387
0.0448		0.0150	0.0298
0.0451	14644-1		0.0272
0.0301			0.0214
0.0351	0.0532	14831-1	0.0295
0.0105	0.0442		0.0152
0.0280	0.0617	0.0715	0.0184
0.0288	0.0138	0.0731	
0.00813	0.0651	0.0562	
0.00496	0.0256	0.0400	CAMPHOR
0.00587	0.0146	0.0174	
0.0263	0.0373	0.0214	06381-1
0.0317	0.0349	0.0247	
0.0199	0.0542	0.0229	0.00745
0.0139	0.0290	0.0155	0.00531
0.0154	0.0176	0.0392	0.0114
0.0110	0.0121	0.0368	0.0113
0.00745	0.00875	0.0353	0.00779
	0.00882	0.0335	0.0122
14643-1		0.0288	0.0125
		0.0180	0.0120
0.0708	14682-1	0.0178	0.0121
0.0474		0.0176	0.0110
0.0343	0.0803	0.0176	0.00971
0.0277	0.0380	0.0161	0.00779
0.0590	0.0479	0.0221	0.00880
0.0642	0.0367		0.00756
0.0406	0.0381		0.00655
0.0349	0.0255	14832-1	0.00485
0.0476	0.0479		
0.0833	0.0654	0.110	
0.0480	0.0992	0.0812	
0.0349	0.00437	0.0757	
0.0287	0.00592	0.0152	
0.0252	0.0645	0.0193	

Table F-3 (continued)

Area in Square Feet

CAMPHOR (cont'd.)	0.0108	0.0338	16166s-1t*
	0.0107	0.0354	
	0.00965		0.0229
06382-1	0.0118		0.0260
	0.00965	16021-1b*	0.0567
0.0147	0.00278		0.0622
0.0219	0.00292	0.0252	0.0689
0.0192	0.00194	0.0703	0.0569
0.0125	0.00076	0.0575	0.0515
0.0116		0.0425	0.0457
0.00542		0.0347	0.0622
0.0143	GRAPEFRUIT	0.0356	0.0509
0.0163			0.0208
0.0135	16020-1t*		0.0527
0.0181		16022-1t*	0.0336
0.0133	0.0664		0.0283
	0.0495	0.0230	0.0314
	0.0474	0.0545	0.0319
06383-1	0.0499	0.0395	0.0253
	0.0290	0.0415	0.0250
0.00949		0.0394	0.0219
0.0176		0.0221	0.0192
0.0170	16020-1b*		0.0142
0.0114		16022-1b*	0.0133
0.0112	0.0597		0.0139
0.0168	0.0481	0.0220	0.0217
0.0181	0.0456	0.0547	0.0219
0.00949	0.0450	0.0454	0.0228
	0.0302	0.0412	0.0169
		0.0393	0.0201
06481-1		0.0213	0.0198
	16021-1t*		0.0233
0.00931			0.0149
0.0128	0.0248		0.0156
0.0116	0.0663		
0.00924	0.0360		
0.0137	0.0349		

* t - for area from photo of top side of leaves;
  b - for area from photo of bottom side of leaves

Table F-3 (continued)

Area in Square Feet

GRAPEFRUIT (cont'd.)	16229s-1t*	0.0420	0.0190
		0.0650	0.0526
	0.00583	0.0650	0.0363
16198s-1t*	0.0172	0.0713	0.0334
	0.0206	0.0278	0.0362
0.0243	0.0186	0.0467	0.0374
0.00833	0.0144	0.0385	0.0211
0.0267	0.0192	0.0110	
0.0326	0.0208	0.0473	
0.0281	0.0153	0.0181	16288s-1t*
0.0292	0.00278	0.0286	
0.0267	0.00944	0.0608	0.0130
0.0191	0.0272	0.0311	0.0226
0.0146	0.0303	0.0603	0.0263
0.0149	0.0297	0.0511	0.0245
0.0135	0.0361	0.0411	0.0175
0.0125	0.0316	0.0453	0.0181
0.0104	0.0262	0.0481	0.0127
0.00868	0.0262	0.0458	0.0154
	0.0230	0.0556	
	0.0227		
16209s-1t*	0.0167		JUNIPER
		16280s-1t*	
0.0038			16024-1
0.0188	16260s-1t*	0.0227	
0.0310		0.0286	0.214
0.0315	0.0060	0.0160	
0.0304	0.0448	0.0350	
0.0344	0.0322	0.0259	
0.0249	0.0502	0.0238	
0.0252	0.0593	0.0195	
0.0205	0.0445	0.0248	
0.0208	0.0600	0.0147	
0.0145	0.0767	0.0224	
	0.0518	0.0433	
	0.0158	0.0510	
	0.0543	0.0609	

---

* t - for area from photo of top side of leaves;
b - for area from photo of bottom side of leaves

Table F-3 (continued)

Area in Square Feet

LAUREL	15014-1	PINE
15012-1	0.0336	16004-1
	0.0379	
0.0156	0.0152	0.1640
0.0118	0.0386	
0.0210	0.0265	
0.0170	0.0237	16C04-3
0.0193	0.0278	
0.0255	0.0145	0.0143
0.0202	0.0151	
0.0226	0.0169	
0.0237	0.00604	
0.0158	0.00549	
0.0120		
0.0199		
0.0104	15015-1	
0.0138		
0.0121	0.0217	
0.00639	0.0189	
	0.0304	
	0.0244	
15013-1	0.0310	
	0.0168	
0.0150	0.0146	
0.0160	0.0156	
0.0197	0.00910	
0.0193	0.0102	
0.0219	0.0165	
0.0234	0.0156	
0.0181	0.0156	
0.0178	0.0112	
0.0158	0.00653	
0.00826	0.00396	
0.00465	0.00160	
0.00194		

Footnote to Table F-3

Description of Area Measurement Samples

AVOCADO

14641-1	8 new leaves; 9 old leaves
14643-1	17 old leaves
14644-1	15 new leaves
14682-1	17 new leaves
14831-1	20 new leaves
14832-1	15 old leaves

CAMPHOR

06381-1	16 leaves, NE side, exposed
06382-1	11 leaves, SW side, exposed
06383-1	8 leaves, protected, low branch
06481-1	14 leaves, protected, low branch

GRAPEFRUIT

16020-1t	5 2-year leaves
16020-1b	5 2-year leaves
16021-1t	6 1-year leaves
16021-1b	6 1-year leaves
16022-1t	6 new leaves
16022-1b	6 new leaves
16166s-1t	32 leaves, trunk 3, sections 1 and 2
16198s-1t	14 old leaves, trunk 2, section 2
16209s-1t	11 new leaves, trunk 2, section 2
16229s-1t	20 leaves, trunk 3, sections 3 and 4
16260s-1t	31 leaves, trunk 1, sections 5 and 6
16280s-1t	20 leaves, trunk 2, sections 3 and 4
16288s-1t	8 leaves, trunk 3, section 5

JUNIPER

16024-1	One twig

Footnote to Table F-3 (concluded)

LAUREL

15012-1	16 leaves, top, south side
15013-1	12 leaves, top, center
15014-1	12 leaves, top, west side
15015-1	17 leaves, bottom, north side

PINE

16004-1	105 needles
16004-3	stem section

Table F-4

FOLIAR SPECIFIC AREAS OF INDIVIDUAL LEAVES

(S_L in sq ft/gm)

CABBAGE	06559-1	0.117	14644-1	0.233
		0.119		0.203
14834-1	0.176	0.111	0.107	
	0.176	0.135	0.112	
0.115	0.176	0.139	0.108	14832-1
0.0962	0.195	0.127	0.118	
0.104	0.173	0.133	0.0967	0.103
0.111	0.171	0.125	0.116	0.108
0.106	0.196	0.125	0.0988	0.107
0.103	0.245	0.128	0.109	0.0881
0.0990	0.305	0.123	0.0970	0.104
0.0855	0.368	0.132	0.106	0.101
0.0920	0.402	0.143	0.107	0.0927
0.104	0.354	0.188	0.114	0.100
0.119			0.113	0.0802
0.117			0.118	0.0839
0.0966	06694-1	14643-1	0.122	0.0892
0.0834				0.0997
0.0798	0.203	0.108		0.105
0.0907	0.188	0.0795	14831-1	0.0936
0.0793	0.191	0.111		0.0970
0.0840	0.154	0.0980	0.162	
	0.125	0.116	0.215	
	0.127	0.0862	0.156	CAMPHOR
CORN	0.140	0.090[illegible]	0.157	
	0.141	0.106	0.223	06381-1
14845-1	0.125	0.121	0.200	
	0.141	0.0979	0.236	0.104
0.197	0.150	0.0959	0.258	0.117
0.202	0.165	0.101	0.240	0.118
0.203		0.110	0.238	0.115
0.200		0.0974	0.234	0.106
0.217	AVOCADO	0.103	0.192	0.102
0.220		0.119	0.198	0.109
0.226	14641-1	0.110	0.189	0.112
0.223			0.216	0.112
0.248	0.117		0.180	0.106
0.274	0.117		0.218	0.125
0.293	0.121		0.239	0.128

Table F-4 (continued)

(S_L in sq ft/gm)

CAMPHOR

06381-1 (cont'd.)

0.112
0.147
0.127
0.114

06382-1

0.106
0.111
0.117
0.126
0.161
0.132
0.158
0.121
0.110
0.108
0.105

06383-1

0.141
0.140
0.153
0.170
0.172
0.146
0.141
0.132

GRAPEFRUIT

16020-1

0.0783
0.0644
0.0831
0.0692
0.0924

16021-1

0.0864
0.0788
0.102
0.0621
0.0764
0.0728

16022-1

0.126
0.126
0.134
0.117
0.107
0.162

16166s-1

0.0492
0.0654
0.0616
0.0768
0.0639
0.0743
0.0501
0.0565
0.0771
0.0639
0.0418
0.0906
0.0574
0.0566
0.0632
0.0927
0.0586
0.0581
0.0628
0.0553
0.0645
0.0864
0.119
0.0841
0.0779
0.0681
0.0680
0.0680
0.0715
0.0817
0.0660
0.0643

16198s-1

0.0968
0.126
0.0911
0.0921
0.0832
0.0900
0.0800
0.0680
0.0730
0.0811
0.0750
0.0755
0.0674
0.0626

16209s-1

0.161
0.152
0.155
0.137
0.145
0.146
0.113
0.144
0.127
0.137
0.133

16229s-1

0.0882
0.0939
0.0831
0.0675
0.0635
0.0781
0.0680
0.0804
0.109
0.118
0.0745
0.0916
0.0895
0.0803
0.0986
0.0643
0.0769
0.0583
0.0709
0.0733

16260s-1

0.0897
0.0867
0.0836
0.0797
0.0794
0.0878
0.0732
0.0851
0.0688
0.0667
0.0600
0.0759
0.0750
0.0749
0.0756
0.0529
0.0643
0.0523
0.0688
0.100
0.126
0.118
0.120
0.0965
0.125
0.0998
0.130
0.113
0.0989
0.113
0.121

Table F-4 (concluded)

(S_L in sq ft/gm)

GRAPEFRUIT (cont'd.)	LAUREL	15014-1
	15012-1	0.238
16280s-1		0.240
	0.197	0.233
0.129	0.198	0.234
0.128	0.179	0.235
0.127	0.173	0.208
0.127	0.188	0.213
0.138	0.180	0.222
0.129	0.175	0.209
0.0903	0.167	0.201
0.132	0.151	0.226
0.0925	0.173	0.240
0.0680	0.164	
0.0809	0.159	
0.0687	0.160	15015-1
0.0733	0.157	
0.0687	0.158	0.192
0.0719	0.151	0.181
0.0625		0.184
0.0569		0.196
0.0858	15013-1	0.162
0.0687		0.174
0.0570	0.166	0.178
	0.184	0.178
	0.166	0.185
16288s-1	0.166	0.188
	0.177	0.190
0.105	0.177	0.188
0.0937	0.169	0.209
0.0892	0.188	0.215
0.102	0.198	0.224
0.0651	0.210	0.220
0.0695	0.227	0.192
0.0706	0.181	
0.0690		

Table F-5

RATIO OF PROJECTED AREA TO TOTAL AREA
FOR LEAVES AND STEMS OF SEVERAL PLANTS

Sample Number	Plant Part	Ratio
06559-3	Corn stalk	0.317
14667-1	Onion stems	0.318
06634-1	Pea stem leaves	0.914 ± 0.018
06635-1	Pea stem leaves	0.948 ± 0.026
06521-1	Potato leaflets	0.956 ± 0.021
06563-1	Potato leaflets	0.886 ± 0.051
06566-1	Radish[a] leaves	0.960 ± 0.013

a Overlapping ruffle on 25 percent of leaves

Figure F-5
PLANT GEOMETRY PHOTOGRAPH: BEET

Figure F-6
PLANT GEOMETRY PHOTOGRAPH: CARROT

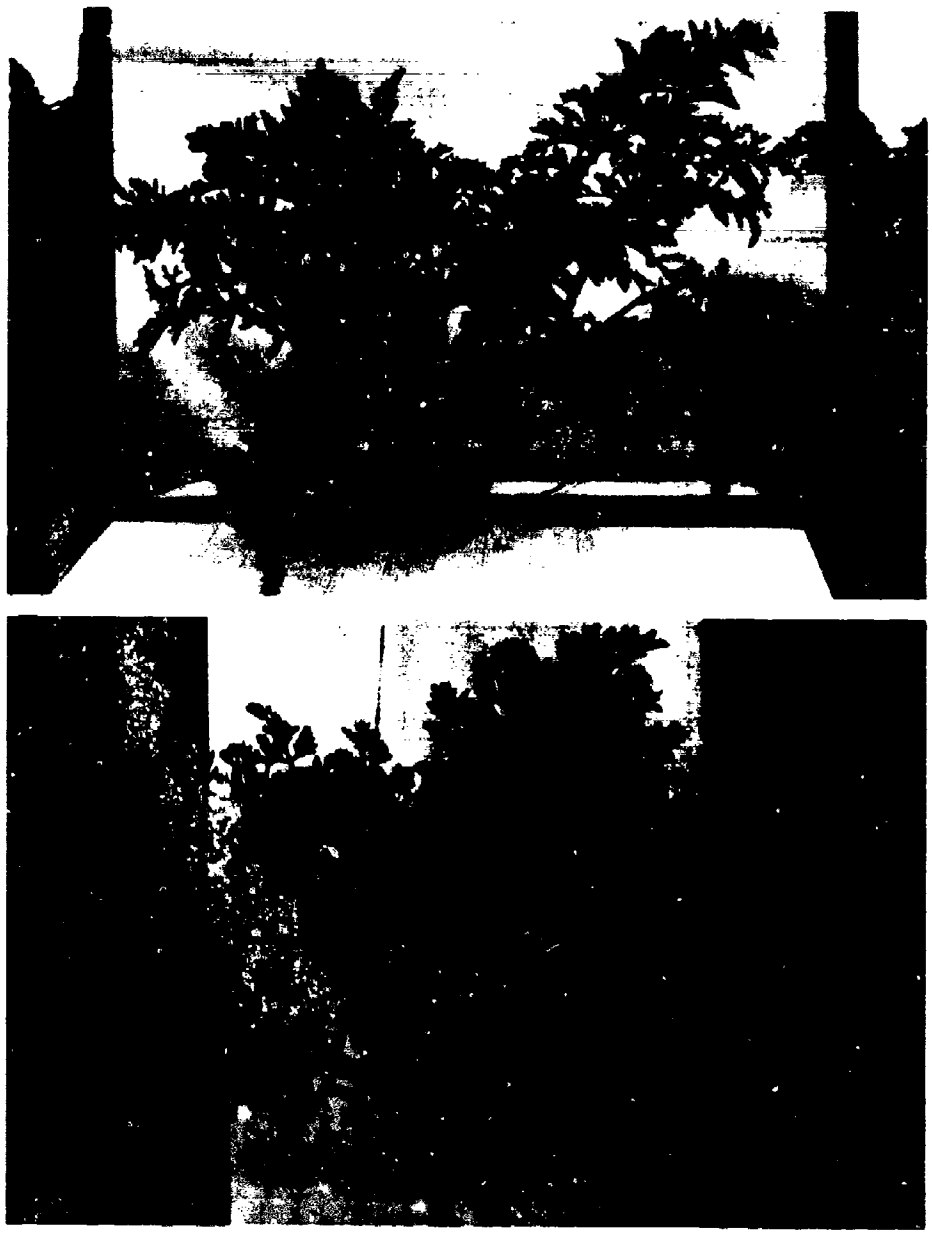


Figure F-7
PLANT GEOMETRY PHOTOGRAPH: CABBAGE AND CORN

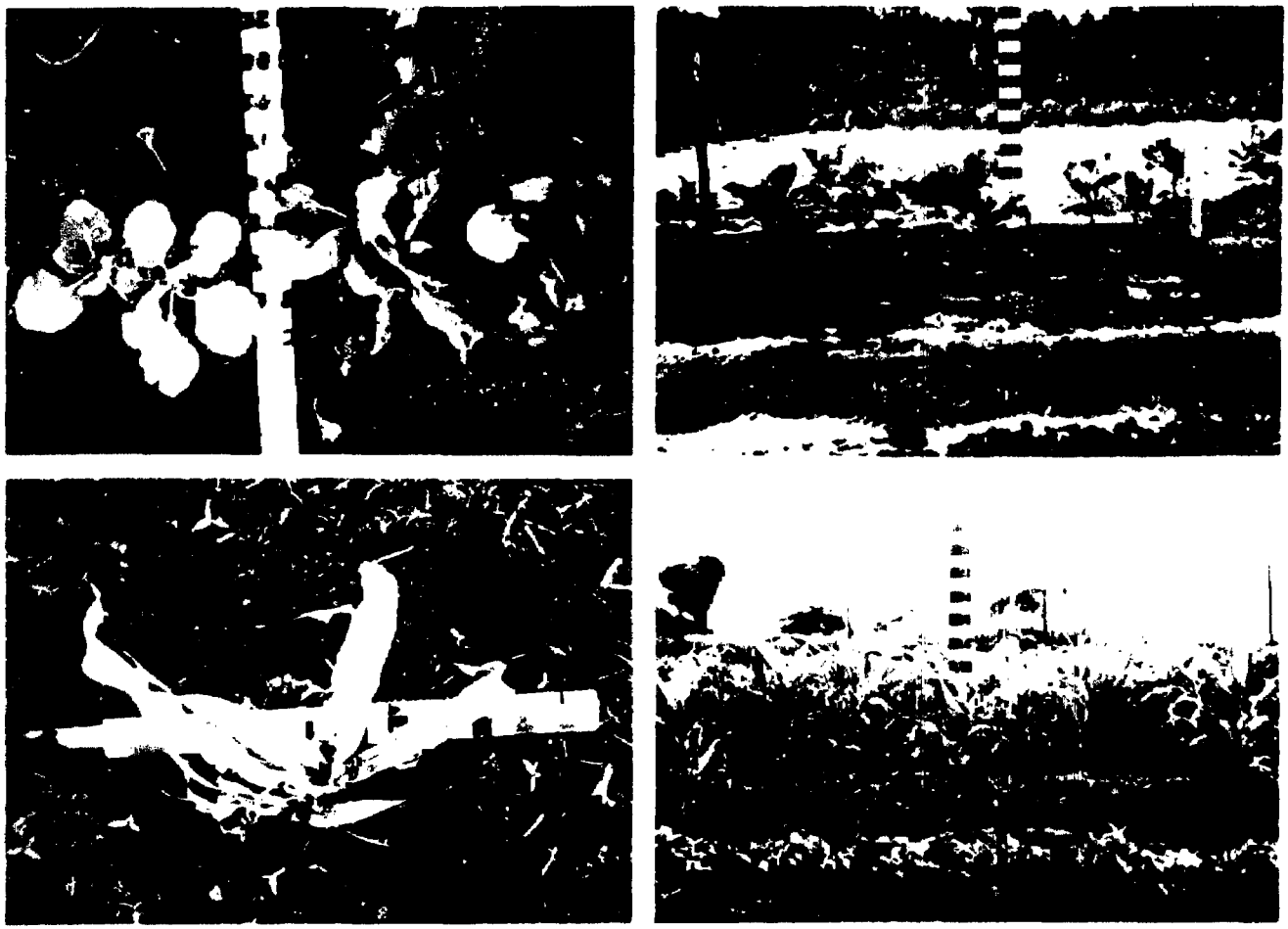


Figure F-8
PLANT GEOMETRY PHOTOGRAPH: LETTUCE

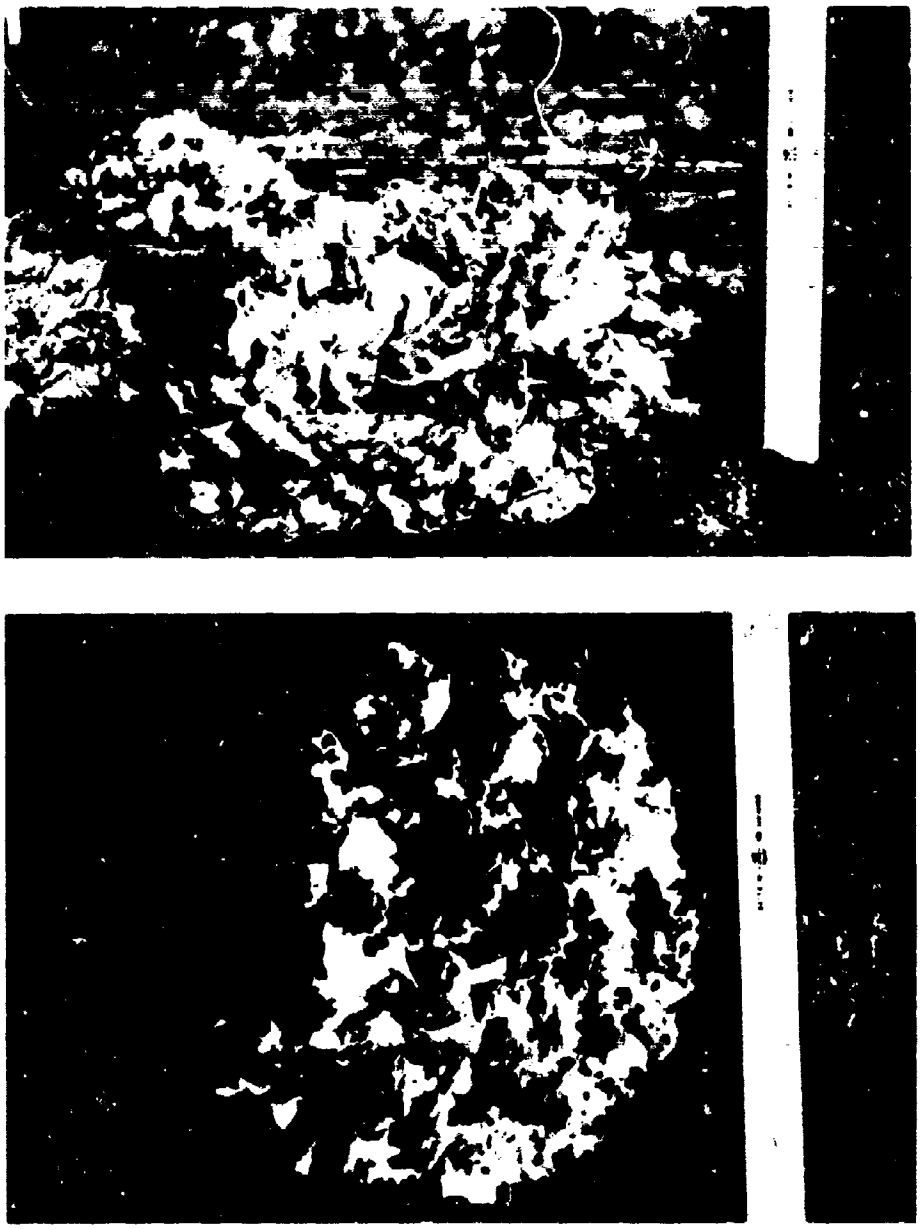


Figure F-9
PLANT GEOMETRY PHOTOGRAPH: ONION

Figure F-10
PLANT GEOMETRY PHOTOGRAPH: SQUASH

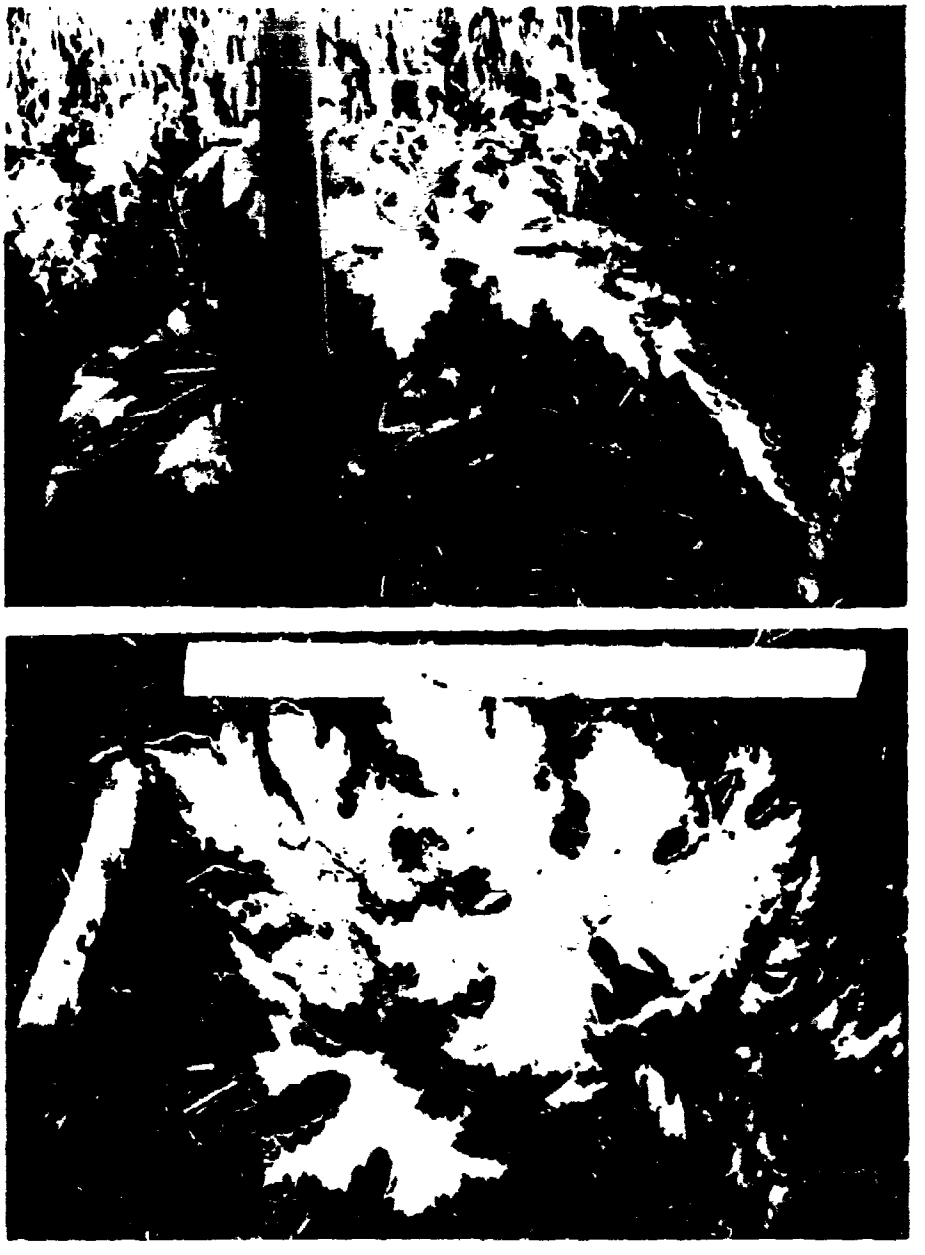


Figure F-11
FOLIAR SPATIAL DENSITY PHOTOGRAPH: LAUREL

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